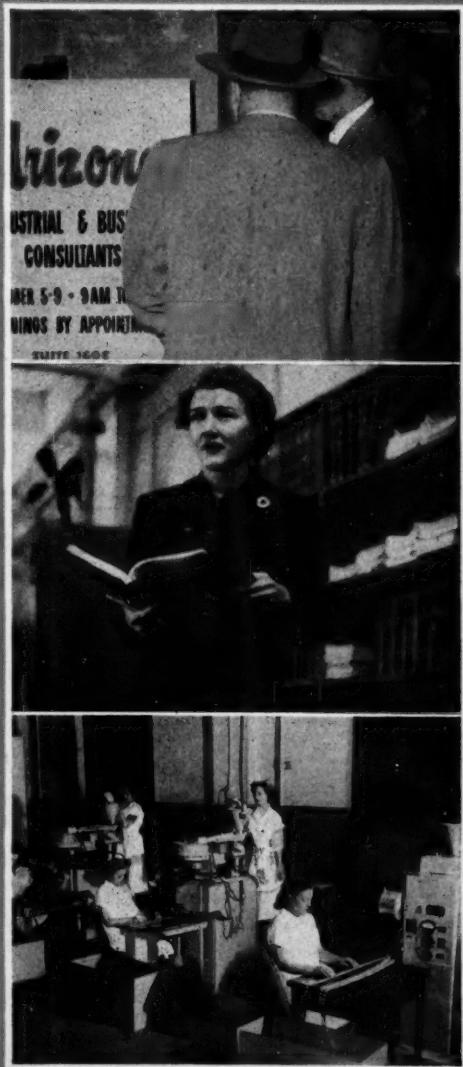


# Chemical Week

November 28, 1953

Price 35 cents



► **Disperse or be bombed, government warns industry—so Western states lure firms . . . . . p. 29**

**Target: hotel maintenance aids that will really "guest-proof" rooms; it's a big market . . . p. 38**

► **Speed, not style is Nopco's motto for its technical literature abstracting service . . . . . p. 43**

**One-shot packages catch on for industrial chemical samples, consumer products . . . . . p. 53**

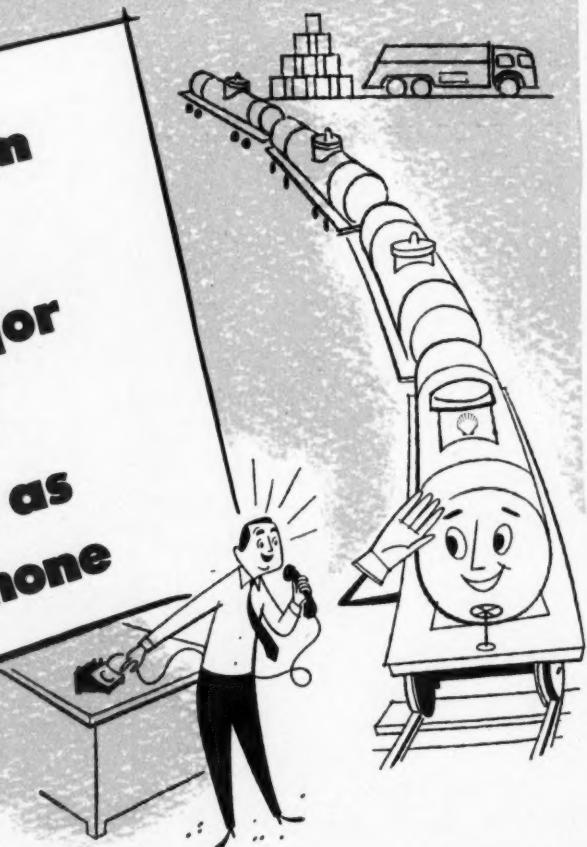
► **Helium needs outstrip Uncle Sam's plant capacity; private capital may get a crack . . . . . p. 77**

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AS THE NEED for dependable petroleum-derived ethyl alcohol has become more and more urgent, Shell Chemical has expanded its distribution facilities.

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\*Tank truck and drum availability west of Rocky Mountains is limited.

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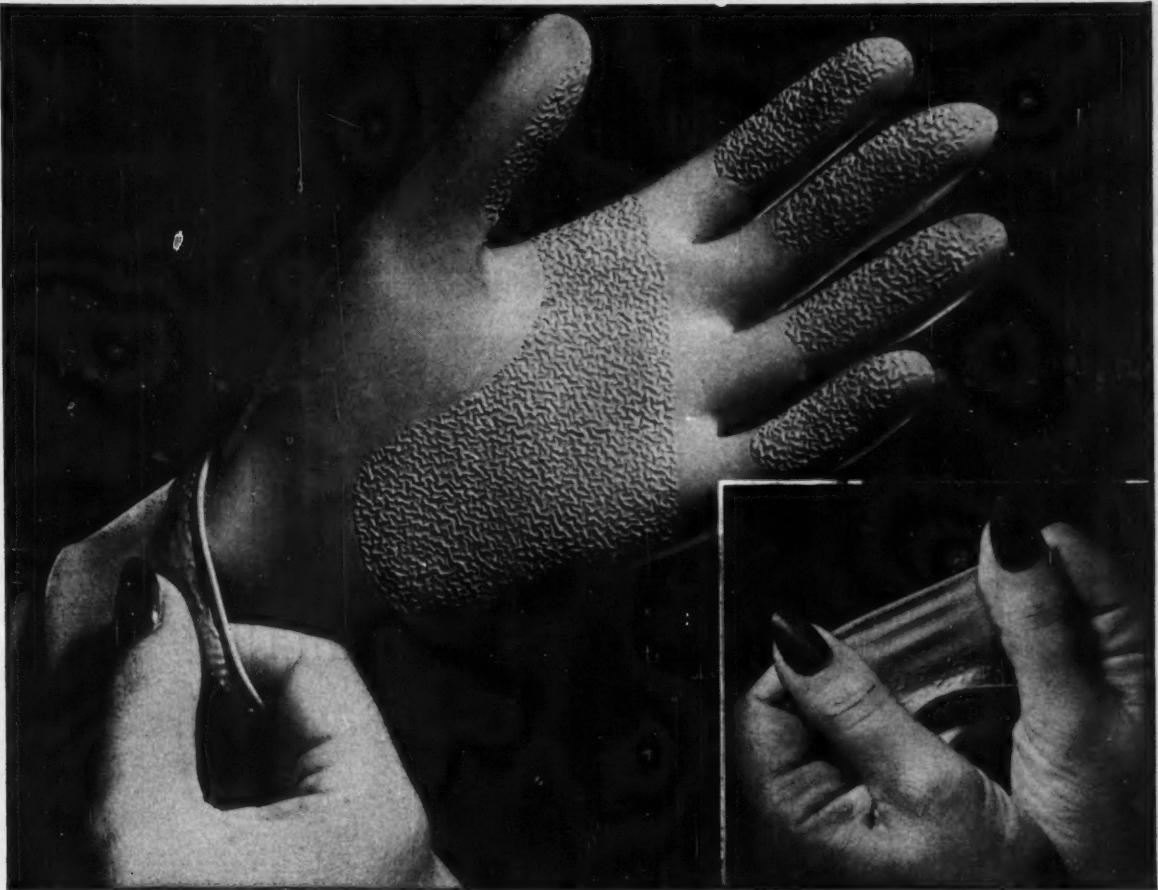
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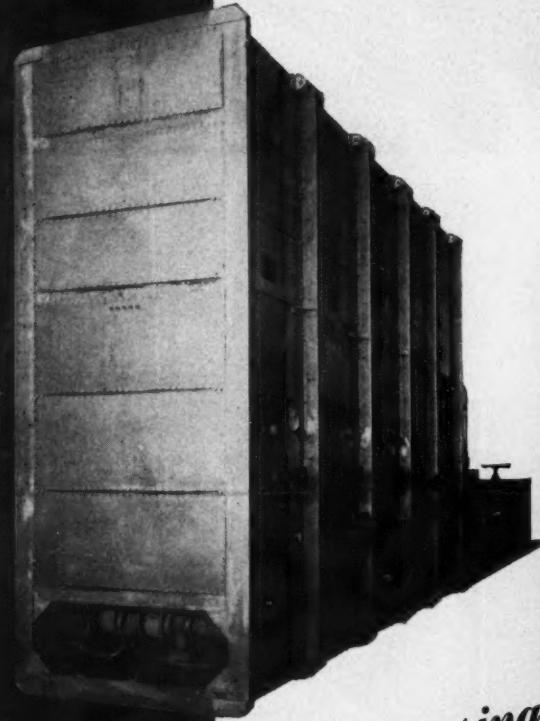
Developing a material to help improve these household gloves is typical of the many jobs American Anode does—jobs that solve product problems and help sales appeal.

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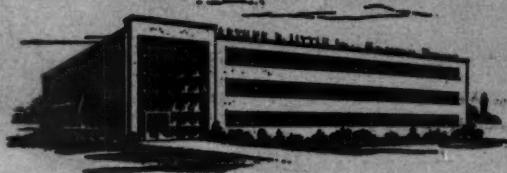
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# Chemical Week

Volume 73 • November 28, 1953 • Number 22

OPINION .....	4	DISTRIBUTION .....	53
NEWSLETTER .....	9	PRODUCTION .....	65
BUSINESS & INDUSTRY .....	13	MARKETS .....	73
RESEARCH .....	43	SPECIALTIES .....	83



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Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), founder. Publication Office: 1309 Noble St., Philadelphia 23, Pa.

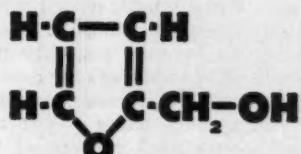
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Subscriptions to Chemical Week are solicited in the chemical and process industries from management men in administration, research, production and distribution. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 1309 Noble St., Philadelphia 23, Pa., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Single copies \$5. Subscription rates—United States and Possessions \$5.00 a year; \$2.00 for two years; \$10.00 for three years; \$15.00 for four years; \$18.00 for five years. Other Western Hemisphere Countries \$15.00 a year; \$22.00 for two years; \$29.00 for three years. All other countries \$20.00 for one year; \$40.00 for two years; \$50.00 for three years. Entered as second class matter December 29, 1951, at the Post Office at Philadelphia 23, Pa., under the act of March 3, 1879. Printed in U.S.A. Copyright 1953 by McGraw-Hill Publishing Co., Inc.—All rights reserved.

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Furfuryl Alcohol

**Solvent, Resin Former, Wetting Agent**

**DESCRIPTION:**  
Amber-colored liquid.

**Properties:**  
Boiling Point (pure)  
°C. 764 mm. .... 175-7  
Specific Gravity (20/20°C). 1.136  
Flash Point (open cup) °C. 75  
Vapor Pressure 55.5°C., mm. .... 5.5

**As a Solvent:** FA is miscible with water, chloroform, ether, coal tar solvents, and non-paraffinic hydrocarbon solvents; dissolves nitrocellulose, dyes and many resins, both synthetic and natural.

**As a Resin Former:** FA reacts with phenolic compounds, formaldehyde, melamine, urea, thiocyanates and with itself, to form resins with varied and valuable properties.

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**Literature:** Write for Bulletin 205 describing the chemical and physical properties as well as the uses of furfuryl alcohol. A request to the nearest office, mentioning the nature of your interest will bring you a selection of applicable literature.

\*Reg. U. S. Pat. Off.

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# OPINION . . .

## Tariffs: A Laudable Approach

If you hanker for arguments here's a sure-fire starter: just mention the word "tariffs" to any chemical executive. There just aren't any neutrals on the tariff question. Every chemical man, it seems, holds rugged opinions—and quite understandably. Tariffs, as someone has said, touch the pocket-book nerve—and that's the most sensitive nerve in the human anatomy.

Everyone is either a "free trader" (that's the most evil epithet that a high tariff man can hurl), or he's a "protectionist" (that's the most evil epithet that a low tariff advocate can lay tongue to). And last week, when the Manufacturing Chemists' Assn. took its stand on tariffs by filing a brief with the Randall Commission, there was a groundswell of reaction. Some favored the views expressed by the MCA; some dissented.

But this, we think, is significant. Even those who disagreed with what the association said, agreed that the case was clearly and logically presented. The logic was logic and not specious argument; the perspective was broad; the presentation was calmly factual rather than emotional. That's a major step forward and one that all industries might well emulate.

In recent months—and much too frequently, in our opinion—far too many articles have been printed, and far too many speeches have been made by representatives of various industries, in which the tariff issue has been cloaked or distorted. Many of the arguments used have been nonsensical and bordering on the dishonest. These are some of the tactics that have been employed, and, we think, harmfully:

The emotional appeal ranks as a top favorite. The reasoning runs like this: sulfuric acid is necessary—in fact it's *vital*—for the manufacture of synthetic ethanol. Ethanol is used as an antiseptic and to ease the discomforts of bedridden folk. Reduce the tariff on sulfuric and we would be flooded with supplies from foreign shores. Result: our domestic facilities have to shut down. Then comes a time of emergency and we can import no more acid. We are bereft of supplies. *Voila*, we can't make ethanol. No alcohol and the lives of thousands of hospital patients are imperiled. The obvious conclusion, of course, is that we must—at all costs—see that ample tariff protection is accorded sulfuric acid.

Ridiculous? Of course. Exaggerated? No, not a whit. That sort of emotional

appeal, that sort of hippety-hop *non sequitor* reasoning has been indulged in by a lot of industries and with respect to a lot of items. (Sulfuric acid, we'll admit, has escaped this treatment but many other materials, with an equally distant relationship to health-preserving products, have been similarly "defended.")

It's been open season, too, for figure choosing. "Averages" have been a favorite football. This is the *modus operandi*: take the average duty on all products imported into the U.S. in any year; then compare that average with today's average on all imports. You may well find that the latter is lower. That means, "logically," that our tariffs are moving downward. Perhaps that's so, perhaps it isn't. The character of our imports today may be vastly different from what it was a decade ago. But that isn't mentioned. No one is supposed to discern that. It's simple to do fast footwork with figures of that ilk; and it's just as sensemaking as comparing oranges and bananas.

Some figures, and some conclusions, that haven't been the essence of significance have also sprung from percentile calculations. Let's suppose the duty on a specific import is 60%—adequate enough to prohibit any U.S. marketing of the product. And suppose that duty is cut to 40%—and that's still an effective protective barrier. The duty may, percentagewise, be referred to as having been "slashed" by a third. That's true, as it stands. But it is far from meaningful. And undue emphasis may be placed on the "slash" and a significance implied that is utterly without justification.

Almost as frequently, many industries have striven in their Randall Commission briefs to muster a dozen reasons why they are unique, why they should be "protected." Often one reason is a completely valid one—the other eleven are just window-dressing. We have studied a good many of these briefs and the common denominator arguments are striking. Most "reasons why" apply equally to the makers of lace curtains and to the manufacturers of locomotives. Importantly, of course, the presentation of weak arguments undermines both the believability and the impact of the entire case.

We are gratified to see that the MCA has widely eschewed all those tempting—and they do appear to be tempting—approaches. The case for

chemicals was not overgeneralized; there was no mustering of a multitude of diverse arguments; comparable statistics were compared; no effort was made to exploit emotions. The report, to our mind, was thoughtful and constructive.

The MCA stressed, and quite properly in our opinion, the essentiality of a strong, integrated chemical industry to our national defense. It dealt with the necessity of considering chemicals or related groups of chemicals individually and the folly of any "across-the-board" revision of tariffs.

It pointed out the prime danger we face: unfair competition from cartels, industries subsidized by foreign governments, currency manipulations. (The zeal for dollars often outweighs a foreign trader's interest in making a profit on any particular transaction. That, perhaps, is a rather delicate way of describing "dumping.")

Those are all top-ranking issues, vital to everyone of us. And, although many of the pros and cons of tariff policies have yet to be thrashed out, and although not everyone may agree completely with everything that the MCA said, we feel that the association is to be commended for its calm analysis of the situation.

It is our hope, too, that those who are called upon either to talk about or to write about tariffs in the future will study, carefully, what the MCA has done. Any expressions of opinion that are less thoughtful, less forthright, or less defensible are neither befitting to our industry nor beneficial to it.

—W. Alec Jordan, *Editor.*

## DATES AHEAD

**Chemicals Industries Exposition**, Commercial Museum and Convention Hall, Philadelphia, Pa., Nov. 30-Dec. 6.

**National Drug Trade Conference**, annual meeting, Washington hotel, Washington, D.C., Dec. 5.

**Chemical Specialties Manufacturers Assn.**, annual meeting, Mayflower hotel, Washington, D.C., Dec. 6-8.

**American Pharmaceutical Manufacturers Assn.**, midyear meeting, Waldorf-Astoria hotel, New York, N.Y., Dec. 7-9.

**Synthetic Organic Chemical Manufacturers Assn.**, annual meeting, Commodore hotel, New York, N.Y., Dec. 9.

# A phosphate\*

## Makes this Possible

\* Another interesting example of how Victor chemicals benefit industry . . . from Agriculture to Atomic Energy, from Foods to Pharmaceuticals

Manufacturers of water soluble fertilizers know that Bible prophecy is today's reality. Irrigation ditches, stretching through vast areas of formerly non-productive land, carry water soluble fertilizers that literally make the desert "blossom as the rose." These liquid solutions get more nitrogen into the plants than do dry or gaseous materials. They produce better citrus, vegetable and alfalfa crops.

Victor phosphoric acids and ammonium phosphates are available in quantity from strategically located warehouses to formulators of water-soluble fertilizers. The purity, uniformity and stability of these Victor chemicals is backed by Victor's unique record of 55 years of phosphate experience. When it comes to phosphates for fertilizers and for other uses, you'll find it pays to see Victor Chemical Works, 141 W. Jackson Blvd., Chicago 4, Illinois. In the West: A. R. Maas Division, South Gate, California.

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*Dependable Name in*  
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for 55 years

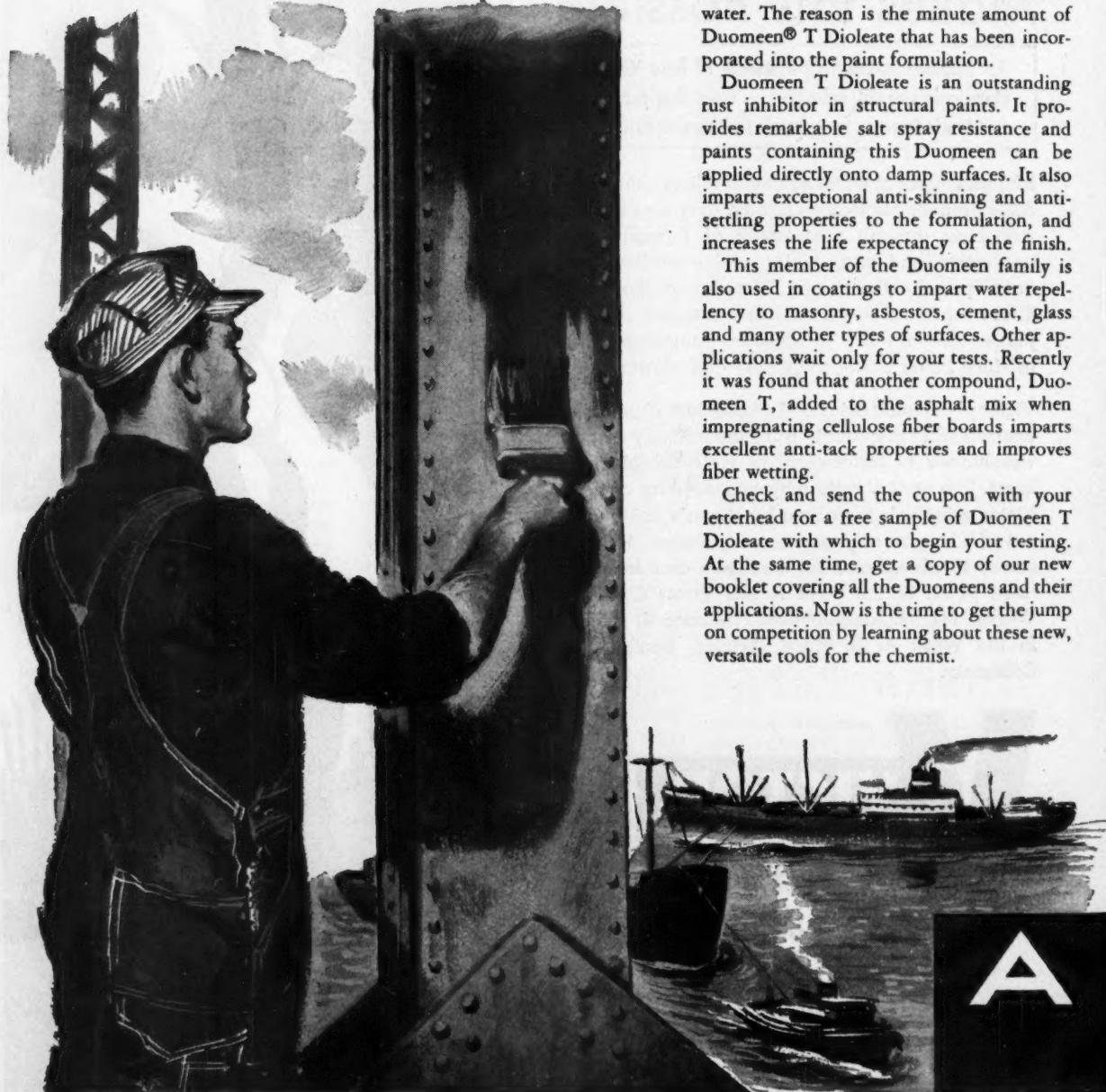
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# New products and profits with Armour Chemicals



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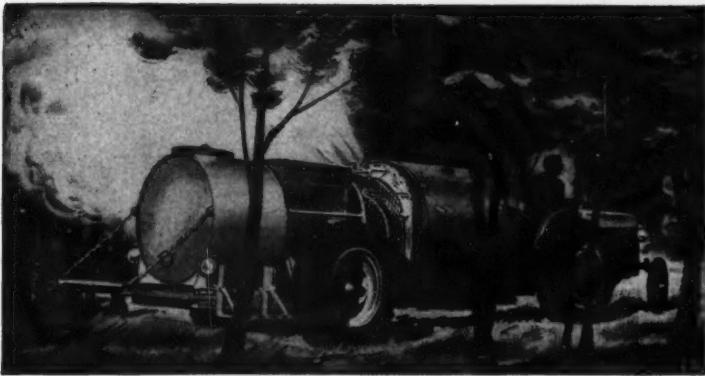
A primer coat of red lead paint is designed to stop corrosion. Usually, the paint job lasts about five years. Then it must be done again.

But this job can last considerably longer than most. This paint *hates* water—and it makes the metal beneath it non-wettable to water. The reason is the minute amount of Duomeen® T Dioleate that has been incorporated into the paint formulation.

Duomeen T Dioleate is an outstanding rust inhibitor in structural paints. It provides remarkable salt spray resistance and paints containing this Duomeen can be applied directly onto damp surfaces. It also imparts exceptional anti-skidding and anti-settling properties to the formulation, and increases the life expectancy of the finish.

This member of the Duomeen family is also used in coatings to impart water repellency to masonry, asbestos, cement, glass and many other types of surfaces. Other applications wait only for your tests. Recently it was found that another compound, Duomeen T, added to the asphalt mix when impregnating cellulose fiber boards imparts excellent anti-tack properties and improves fiber wetting.

Check and send the coupon with your letterhead for a free sample of Duomeen T Dioleate with which to begin your testing. At the same time, get a copy of our new booklet covering all the Duomeens and their applications. Now is the time to get the jump on competition by learning about these new, versatile tools for the chemist.



## Spray emulsions must be stable— Armour chemicals make sure they are!

Stability in spray formulations is vital, because it costs money to stop and stir an unstable emulsion. Armour chemicals have proved, time and again, that they form stable, long-lasting emulsions with minimum agitation. That's one reason these Armour chemicals are so popular with agricultural chemists.

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hardness. Spray-rig operators can use locally supplied water without fear of forming curds in the spray, clogging nozzles or wasting time in unnecessary cleaning.

These Armour emulsifiers are highly efficient. Chlordane, DDT, 2,4-D, toxaphene—are only a few of the toxicants that can be emulsified easily and economically with Armour chemicals. Send the coupon for Technical Bulletin F-2 which contains further information on our complete line of emulsifiers. Free samples of the two Ethomeens are also available.



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In selecting raw materials for compounding rubber, many problems must be considered, such as the length of time the raw material will be held in storage, resistance to oxidation and rancidity, storage properties, ease of handling in automatic processing equipment. By any standard, Armour's Neo-Fat 18-59, rubber stearic acid, meets requirements of the rubber industry.

Uniformity is one of the most important considerations for a product of this type and Armour's patented manufacturing process assures this vital uniformity. Hence formulas need not be altered to coincide with varied stearic acid specifications. And this uniformity extends to the packaging of Neo-Fat 18-59. It is packed in flat-lying,

easily handled 50-pound, 5-ply multiwall bags. These bags may be stacked and palletized 3 skids high without worry about shifting.

The high acid value of this fatty acid actually offers processing economies, since Neo-Fat 18-59 goes farther in processing than most products. And its excellent color permits the use of Neo-Fat 18-59 in non-black rubber articles.

Other outstanding advantages include low unsaponifiable content, free-flowing, and resistance to caking. Critical comparison of Neo-Fat 18-59 with any other similar material will convince you of its superiority. Send the coupon with your letterhead for free samples for your own tests.

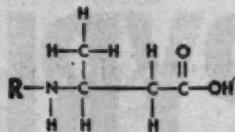
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## N-Coco B-Amino Butyric Acid

This chemical is one of the comparatively small group of amphoteric surfactants which can act either as anionic or cationic agents. Compounds containing basic and acidic groups, as this does, are examples.



The compound is supplied as a 50% water solution of the internal salt (zwitterion). Due to the presence of a secondary amine group and a carboxylic group, it is amphoteric, reactive with either an acid or a base. Selection of the proper organic or inorganic acid or base provides a wide range of physical and chemical properties. Laboratory data show that the sodium salt of this substituted amino acid is an excellent suds promoter and foam stabilizer for synthetic detergents and also improves their detergent properties. (Preliminary data indicate possibilities as a stabilizer in latex foam rubber.) Send the coupon with your letterhead for free samples.

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 Ethomeen and Ethofat samples and Tech. Bulletin F-2  
 Neo-Fat 18-59 sample and bulletin  
 N-Coco B-Amino Butyric Acid sample

Name \_\_\_\_\_

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Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

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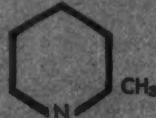


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*Chemicals*

# PYRIDINES

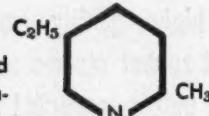
## Alpha Picoline (2-Methyl Pyridine)

Alpha picoline is a colorless liquid that finds a major use in the preparation of 2-vinyl pyridine. 2-vinyl pyridine is copolymerized with such monomers as acrylonitrile, butadiene and styrene to produce plastics and elastomers of improved or modified properties.



## 2-Methyl-5-Ethyl Pyridine (Aldehydine)

2-Methyl-5-Ethyl Pyridine (MEP) is a straw colored liquid that is used commercially in the pharmaceutical field as well as the synthetic fiber, plastic and elastomer industries.



## Gamma Picoline (4-Methyl Pyridine)

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### Beta Collidine

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### Pyridine Bases

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Corrosion inhibitors for steel pickling baths.

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Industrial Chemicals Division,  
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INTERMEDIATES  
FOR  
organic  
syntheses

## PHYSICAL PROPERTIES

Molecular weight	93.12
Melting point, °C	—66.5
Boiling Point, °C	129
Density, gms/ml. @ 15/4 °C	.950
Solubility	
Water	very soluble
Alcohol	infinite
Ether	infinite
Color	water white
Odor	disagreeable

## PHYSICAL PROPERTIES

Molecular weight	121.18
Melting point, °C	—70
Boiling point, °C	174
Density gms/ml. @ 23/4 °C	.9184
Solubility	
Water	insoluble
Alcohol	soluble
Ether	soluble
Color	light amber
Odor	disagreeable

## PHYSICAL PROPERTIES

Molecular weight	93.12
Melting point, °C	3.8
Boiling point, °C	143.1
Density g/ml. @ 15/4 °C	.9571
Solubility	
Water	infinite
Alcohol	infinite
Ether	infinite
Color	water white
Odor	disagreeable

## PHYSICAL PROPERTIES



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PRODUCTS AND DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

## NEWSLETTER

Look for the chemical industry to chuck all false modesty, adopt a more aggressive attitude all down the line next year. Symptoms of the more vigorous outlook toward the rest of the world popped out at various sessions of last week's two-day joint meeting in Washington of the Chemical Market Research Assn. and the ACS Marketing Div.

• Chemical sales needn't dwindle in 1954, says Commerce Dept.'s Carl Oechsle. Foreseeing continuation of industrial prosperity, with high investing in plant and machinery (CW, Nov. 7), Acting Asst. Secy. Oechsle thinks all that's needed to keep sales up to current peaks is a bit more snap in selling efforts.

• Everyone in the federal government will be more aware of the chemical industry and its importance to the nation if Davison Chemical's Norman Hathaway has his way about building up the chemical and rubber division of Business & Defense Services Administration (CW, Oct. 3). Hoping to make the division useful to industry, government and the public, Hathaway is asking that his 32-man staff be expanded to 87.

• While the chemical industry has done a first-rate job of selling itself on its essentiality, Pres. William Foster of Manufacturing Chemists' Assn. asks: Is anybody else convinced? To work on this aspect of the industry's public relations job, MCA will follow up its "Chemical Industry Fact Book" (CW, May 30) with an "MCA Chemical News" bulletin to be published every two months. The 4-column, 4-page pilot issue, out this week, is being mailed to all of the country's large newspapers, radio and TV stations, high school science teachers, technical schools, science clubs, and to daily newspapers in 497 towns at which are located one or more chemical plants.

Both good news and bad news mark corporate developments this week. On the credit side:

• Something may come of Carthage Hydrocol after all. Shut down last June and since abandoned by some of its original backers (CW Newsletter, Oct. 24), the Brownsville, Tex., plant may be bought by Stanolind Oil & Gas. Reconstruction Finance Corp., the project's chief creditor, has agreed to a plan whereby Stanolind can thoroughly investigate the plant, its processes, gas supplies and other operating aspects. If Stanolind then decides to buy, RFC will arrange for the transfer.

• In its initial test phase only a month ago (CW Newsletter, Oct. 24), Monsanto's Avon, Calif., phenol plant is now in full production. The process there is benzene sulfonation.

• Another large natural gas firm may take the plunge into petrochemicals. It has retained an engineering firm to make a comprehensive survey.

But on the debit side is the latest news of Texas Gas Co.—formerly McCarthy Chemical. Already involved in a legal tiff (CW Newsletter, Nov. 14), the firm is now liquidating its Winnie, Tex., plant facilities, selling its equipment piecemeal.

It looks as though soil conditioners have about made the grade—makers of farm and garden aids are now recognized by the federal govern-

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## NEWSLETTER

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ment as comprising an industry all their own. The Federal Trade Commission, aiming to develop a code for this industry, is inviting makers of synthetic soil conditioners to a trade practice conference to be held in Washington Dec. 10. At the conference, FTC will consider proposals for rules designed to eliminate and prevent unfair or deceptive acts that violate laws administered by that agency.

**"Expansion" is still the dominant theme in the chemical industry as this eighth postwar year nears its end:**

- Still greater diversification will mark next year's operations of Mathieson Chemical, which is continuing its series of acquisitions by purchasing Puritan Co. and its wholly owned subsidiary, Genesee Research Corp., both of Rochester, N. Y. Puritan, through its operating subsidiary, makes and packages automotive specialties, is the second oldest soap manufacturing concern in the U. S.

- Another chemical purchase: Roubechez,<sup>\*</sup> Inc., of New York, dealing in aromatic chemicals and essential oils, is buying the assets (no real estate included) of the aromatic chemicals department of U. S. Rubber Co.'s Naugatuck Chemical Div.

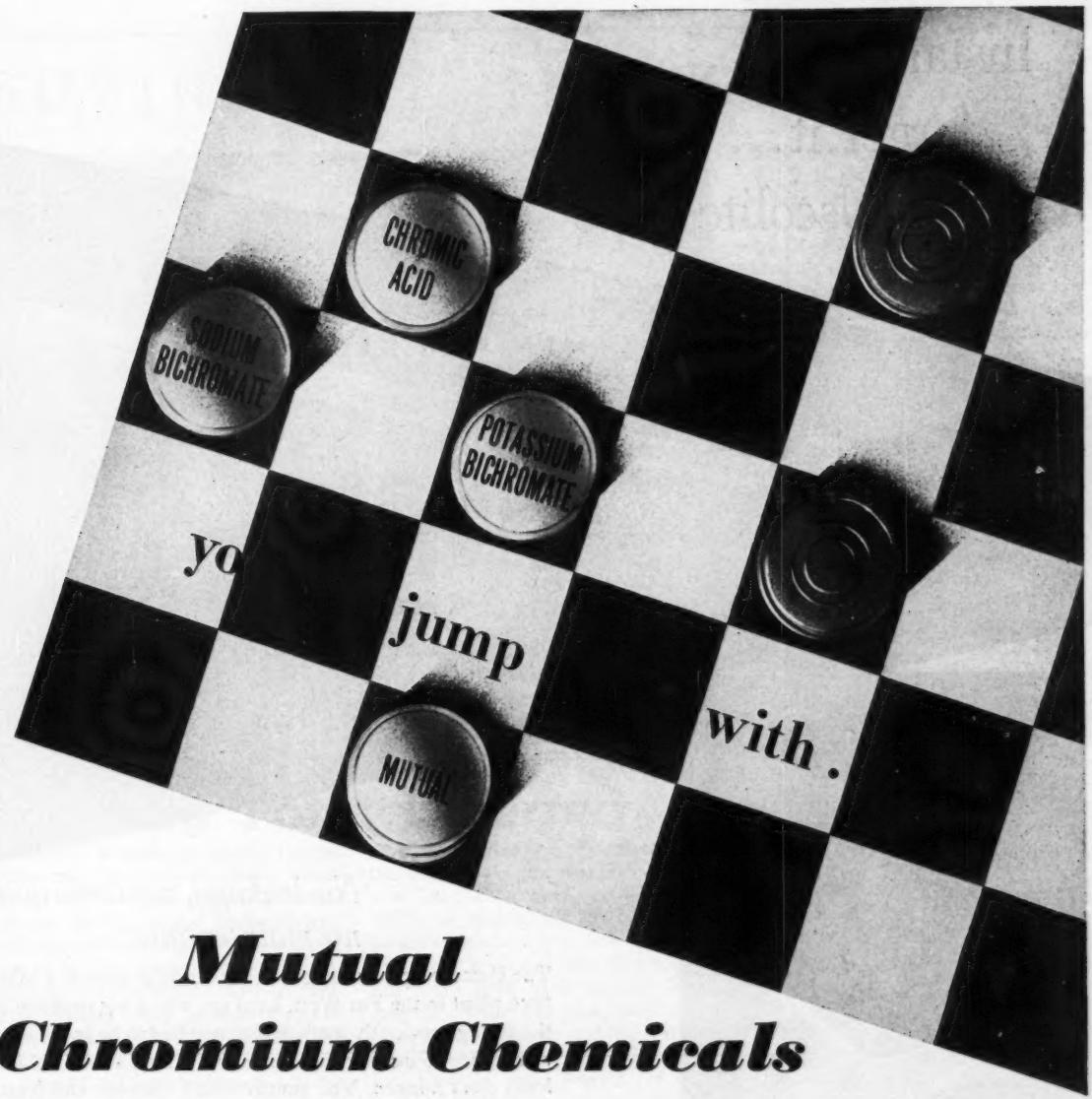
- On paper, at least, the best bargain of the week—if the government accepts the bid—will belong to Western States Development Co., San Francisco, which made the top bid of \$187,000 for the experimental alcohol-from-wood plant at Springfield, Ore., built at a cost of \$3 million. Western States plans to make alcohol at the plant, if feasible, and also may try to produce fertilizer from lignin, a by-product of the Oregon plant.

**Back in Washington**, ready to study testimony taken in Texas last week and then to make up their minds on what the government should do for persons and companies sustaining losses in the 1947 fertilizer explosion at Texas City, are members of the three-man House Judiciary subcommittee. Houston attorney Austin Bryan, expounding on the claimants' argument that the government was responsible for the blast, reminded the congressmen that the ammonium nitrate was made in government-owned plants to government specifications, was being shipped under government contract in fulfillment of the Marshall Plan, and that shippers had previously complained to government officials about the nitrate's becoming "too hot to handle."

"Never say die" seems to be the watchword for the Swiss this week. Interhandel stock dropped from 1,675 to a low of 1,250 francs on the Zurich market after U. S. District Court in Washington dismissed Interhandel's civil suit against the Alien Property Custodian, directed Interhandel's individual stockholders to send to Washington by Dec. 31 sworn statements as to ownership of the shares.

But the Swiss are still a long way from giving up their claim that they should regain custody and control of General Aniline & Film Corp. (CW, Nov. 7). In the first place, Interhandel plans to fight the decision in the U. S. Court of Appeals. Secondly, the Swiss Bankers Assn. is trying to negotiate a compromise settlement that would permit Interhandel management to sell GAF to Blair Holdings Co. for \$60 million. Also the bankers' group is urging Interhandel stockholders to strengthen their position by replying to the Justice Dept. questionnaires promptly and accurately.

. . . The Editors



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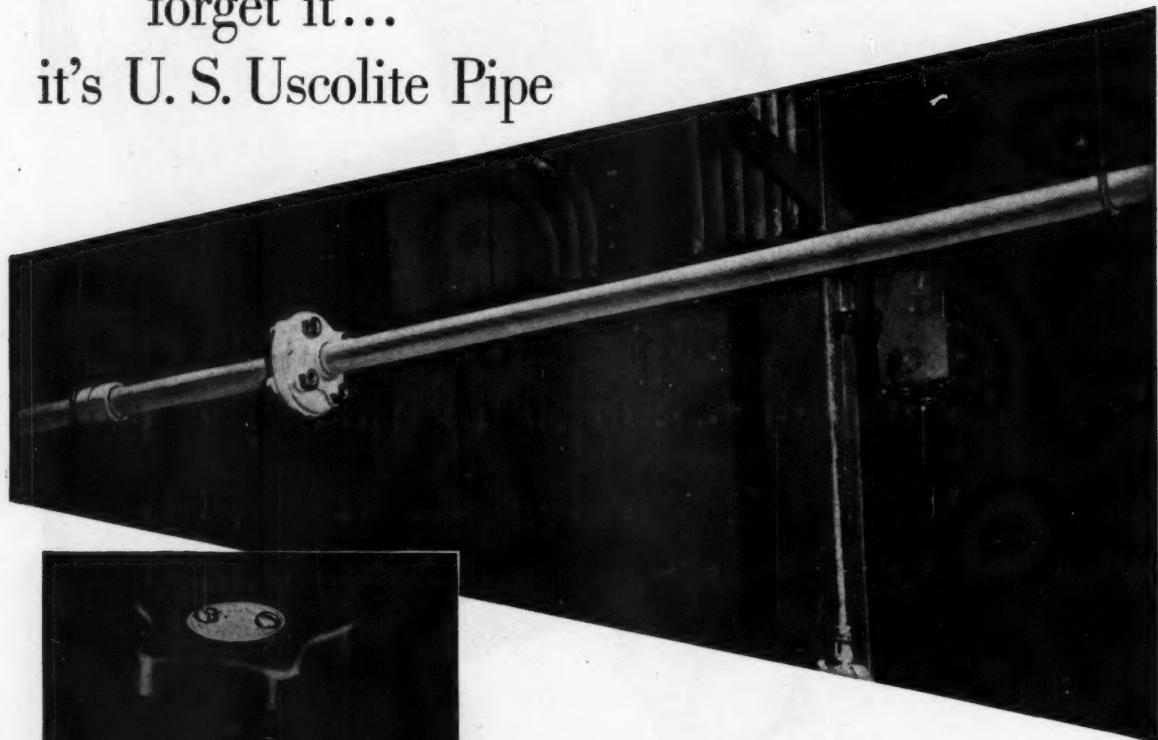


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## BUSINESS &amp; INDUSTRY . . .



MINNESOTA'S O'HARA: Alongside present food rules, a humbler standard.

**Bursting Point Deferred**

Pressure is building up among various industrial groups—chemical, food, drug and cosmetic—both for and against the five major food-and-drug bills now in the Congressional hopper; but so far, it appears that there probably won't be enough concerted pressure to bring about passage of any of those bills during the Capitol Hill session that begins Jan. 6.

Despite all the backstage activity on this subject, legislation on food, drug and pesticide matters is 'way down on any Congressional priority list. Far higher ranking, to most House and Senate leaders, are budget, taxes, labor laws, social security, tariffs and governmental reorganization. Also to be expected: a drive for early adjournment, giving congressmen time to see lots of their constituents before next November's election.

Hence it can be figured that the only food and drug legislation standing any chance of passage this winter and next spring would be that on which there's (1) no serious disagreement among interested parties; (2) already some legislative history, such as completed hearings; or (3) some ingenious pushing by a government agency or industry group.

In brief, here are the chances for the bills now in the running:

- The Miller pesticide bill (H. R. 4277), of any major legislation now under consideration, has the best chance of becoming law. Hearings on this were held back in July (CW, July 25). Since that time, the Food & Drug Administration and the National Agricultural Chemicals Assn., which had been in disagreement on some parts of the measure, have gotten together with Capitol Hill experts and drafted a bill acceptable to everyone.

- There is some chance for the O'Hara imitation bill (H. R. 2739). This bill would allow FDA to set standards for foods below requirements for presently standard foods.

- The so-called Hale amendment (H. R. 6434, a revision of H. R. 5055), too, could be passed. This would cut the time in taking testimony on food standard hearings.

- Congressman Delaney's chemicals-in-cosmetics bill (H. R. 2244) is given virtually no chance of passage, with much of the cosmetic industry violently opposed to any legislation.

- Most interesting subject, from a legislative standpoint, is regulation of intentional food additives. This is covered in the Miller additive bill

(H. R. 4901) and the Delaney food bill (H. R. 2245), which, in addition to food additives, also covers pesticides. Neither of the bills has had support of any industry group or of FDA.

The basic schism between food and chemical manufacturers is the reason why food additive legislation is presently considered controversial, and hence, is not now thought to have too great a chance of passage in 1954.

**Hope Springs Anew**

Gloom is out the window and good cheer prevails this week among those who want the government to get out of the synthetic rubber business.

The brighter outlook came after President Eisenhower's recent appointment of Holman D. Pettibone, president of Chicago Title & Trust Co., to Chairman of the Rubber Disposal Commission.

The switch in attitude can be gauged by comments of Rep. Paul Shafer, Congressional rubber authority. Addressing the Rubber Manufacturers' Assn. after discussing the proposed disposal with commission members: "I am enthusiastic about their appointments and believe that if disposal can be accomplished, they are the men who can bring it about."

**Chemical Jobs Increase**

Employment in the chemical and allied products industry continued to rise, while employment in all manufacturing industries showed another decrease, according to the U.S. Labor Dept.'s figures for last month. The Bureau of Labor Statistic's employment analysis shows that total employment in manufacturing industries was off 200,000 in October from September figures. Total employment was estimated at 17 million. Despite the decline, employment was at a post World War II peak for the month—almost a quarter of a million higher than October 1952.

**"Insult to Science"**

"When they've got me licked on this thing will be when they pat my face with a spade," stated Jesse Ritchie, president of Pioneers, Inc., creators of battery additive AD-X2 (CW Newsletter, Nov. 21). Mr. Ritchie is in Washington this week girding his

## BUSINESS & INDUSTRY

sword, after having earlier asked the Attorney General "to make a full investigation, including a grand jury investigation."

In Oakland, Calif., W. M. Hager, vice-president of Pioneers, Inc., told his distributors, after assuring them that the Post Office fraud order was still cancelled, "Jesse is still in Washington, formulating battle plans and we want to emphasize to you that we are not whipped by any means."

Mr. Hager added that he doubted very much whether the Jefferies Committee report, which confirmed the National Bureau of Standards report that AD-X2 was without merit, "would mean very much to a great many people." He predicted that sales would remain up, and said the committee's findings are "an insult to the scientific world, our distributors and our users."

Meanwhile, the Post Office Dept. and the Federal Trade Commission are again considering fraud orders against Ritchie.

### Shuffle in St. Louis

Monsanto Chemical Co. has shaken up its organization chart, realigning divisions and a few staff departments with an eye to providing better product grouping and a more cohesive basis for future expansion. Three divisions (Merrimac, Texas, Western) are to be eliminated; a new research and engineering division will be created; the new post of executive vice-president will be established; staff departments will be reduced from ten to eight. More particularly:

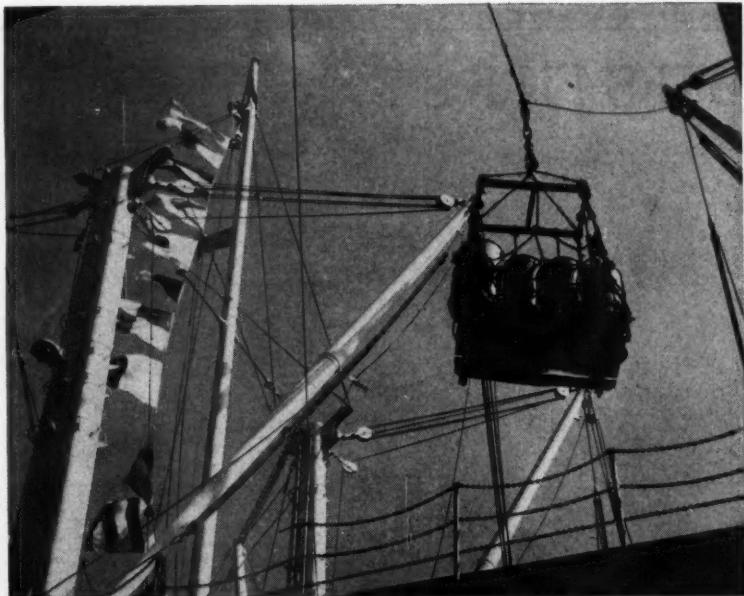
The Phosphate Div. will be rechristened the Inorganic Chemical Div., will operate in addition to its own plants the Merrimac Div.'s Everett, Mass., and Camden, N. J., units.

The Organics Div. will pick up an Avon, Calif., plant formerly run by the Western Div.

The Plastics Div. will take over Western's Long Beach, Calif., Santa Clara, Calif., and Seattle, Wash., works and the Texas City plant of the Texas Div.

A new division to further engineering and research activities will be set up, will include the functions of the Central Research Dept., Dayton, O., General Engineering, St. Louis, and the Engineering Sales Dept. of the Organics Div.

Company officials say the big switch will take effect on Jan. 1, 1954, and that all general managers and staff department heads will henceforth headquarter in St. Louis.



INCOMING CHEMICALS: In court and among U.S. producers, a font of woes.

### Tests for 2,000

That this is a tense moment in the trans-Atlantic chemical competition race, with American and European producers running neck and neck on some products, can be seen in the United States' customs records, which now list an estimated 2,000 protests on chemical shipments.

The number of these chemical customs cases grows larger each week, with new shipments entering the country every day. Some issues probably won't be decided for several years, because of the time required for taking testimony and for writing opinions. Until the cases are finally decided, importers will have to continue paying duty as set by collectors; and in the event of a favorable decision, each importer affected will—eventually—receive a refund.

**One Governs Many:** While the number of protests on chemical imports now totals around 2,000, there are only about 40 cases actually on the Customs Court docket or on appeal to the Court of Customs and Patent Appeals in Washington. Each of these is a "test case," and each decision in such cases will determine the duty to be levied on all shipments.

But some non-chemical test cases also are important to chemical importers and domestic producers because of their bearing on all kinds of tariffs. Foremost among these test cases of general applicability is one dealing with duties on petroleum.

In Customs Court, the decision on

this case implies that, upon termination of a trade agreement, assessments can't be raised to more than 50% of the 1945 rates. If this decision is upheld in the appeals court, it will nullify a Presidential proclamation and prevent tariff rates from returning to 1930 levels if those levels amount to more than 50% of 1945 scales.

**Old Product, New Source:** One major chemical protest case involves certain naphthenic acids, formerly obtained only from coal and—up to now—assessed at 25% under paragraph 1 (acids not specially provided for) in the tariff schedule for chemicals, oils and paints. The test case was filed by Esso Standard Oil Co., claiming that these acids should be admitted free under para. 1733 (distillate from petroleum) or, at the most, at 7½% under para. 1555 (waste).

Other principal test cases:

- Coal-tar colors (medicinal)—assessed at 45% and 7¢/lb. as coal-tar medicinals; claimed at 10% as drugs of vegetable origin advanced in value or condition, or at 25% as a chemical or medicinal preparation obtained naturally or artificially. Plaintiff, Sandoz Chemical Works, Inc.

- Carbon (powder)—assessed at 15% as articles wholly or in part of carbon wholly or in part manufactured; claimed at 12½% as plates, rods and other forms of whatever material. Plaintiff, Morganite, Inc.

- Cholesterol—assessed at 25% as non-alcoholic chemical compound not

specially provided for; claimed at 10% as drug advanced in value or condition. Plaintiff, Fanto Corp.

- Ergosterol—assessed at 25% as non-alcoholic chemical compound; claimed free as crude drug or at 5% as drug advanced in value or condition. Plaintiff, E. F. Drew & Co.

- Rust-remover compound—assessed at 25% as chemical compound not specially provided for; claimed at 1¢/lb. as an acid.

- Synthetic styrene—assessed at 45% and 7¢/lb. as synthetic resin-like product derived from coal-tar products; claimed at 10% as synthetic rubber or at 20% as non-enumerated manufactured article or free as petroleum distillate or free as bitumen. Plaintiff, Esso Standard Oil Co.

- Cleaning fluid—assessed at 25% as chemical compound not specifically provided for; claimed at 7½% as a liquid for cleaning. Plaintiff, Kent Stores, Inc.

- Germanium dioxide—assessed at 12½% as chemical compound not specifically provided for; claimed free as metallic mineral substance in crude form or free as a crude drug of vegetable origin or at 5% as non-enumerated unmanufactured article. Plaintiff, W. R. Grace Co.

- Insecticide—assessed at 40% and 7¢/lb. as coal-tar intermediate; claimed at 25% as chemical compound or at 25% as ester not specially provided for. Plaintiff, Plant Products Corp.

- Coal-tar products (medicinal)—assessed at 45% and 7¢/lb. as coal-tar medicinals; claimed at 5% as drugs advanced in value or condition or at 25% as chemical compounds obtained naturally or artificially. Plaintiff, Sandoz Chemical Works, Inc.

- Gum (synthetic resin)—assessed at 30% and 4¢/lb. as synthetic resin not specially provided for; claimed free as wax of animal or vegetable origin not specially provided for or at 20% as non-enumerated manufactured article or at ½¢/lb. as paraffin or at 25% as chemical element. Plaintiff, Industrial Raw Material Corp.

- Synthetic resin (bakelite agitators)—assessed at 30% and 35¢/lb. as products of which synthetic resin is chief binding agent; claimed at 20% as non-enumerated manufactured articles. Plaintiff, Armour & Co.

With such a miscellany of chemical and drug products swarming to this country from abroad, and with greater volumes sure to come if importers win favorable decisions in these cases, it's easy to see why many chemical producers in the U.S. have that beleaguered feeling.

## Trend to Femininity

Frilly curtains haven't blossomed out in plant windows yet, and dainty doilies still aren't being placed under laboratory glassware; nevertheless, there's a pikestaff-plain trend toward greater employment of women in the chemical industry.

So far, the chemical industry has been decidedly more masculine than most manufacturing industries in the United States; 1953 figures from the Bureau of Labor Statistics show that 27.0% of all manufacturing employees are women, compared with a 19.2% bloc in the chemical industry.

But chemical companies have been increasing both the number and the proportion of their female employees (*see table*), while for manufacturing as a whole the employment of women has risen by less than half of 1% during that same period.

**More and Maturer:** Including employees in all categories—management, professional, clerical, production, maintenance—the figures show that the chemical industry has been relying on women to an increasing extent each year, not only for new jobs created by expansion, but also for some jobs formerly held by men.

Among recruits into chemical ranks during the first year after the Korean invasion, 35.1% were women. This ratio more than doubled to 71.5% in the next 12 months; and for the third year, the number of women employees went up while male employment slacked off.

One thing worth noting: if a sense of responsibility comes with maturity, the women in industry today are more valuable than those of 1940. Since then, the median age of women in the civilian labor force has climbed

from 31.9 to 37.5 years. This is partly because more college-age girls are attending classes instead of punching timeclocks, partly because the proportion of older people has gone up.

**Pharmaceutical Femmes:** Within the various branches of the chemical industry, employment of women ranges from less than 5% in fertilizers to nearly 40% in drugs and medicines.

Throughout the national economy, as of last April, women accounted for nearly 15% of all managerial officials, 35.9% of professional and technical employees, 30.0% of operatives (such as production workers), and 65.4% of all clerical workers. Their share of U.S. total employment was 30.1%.

Women seem to be more restless in chemical jobs than in other lines. Last year, labor turnover rates for women were 33% higher than for men in the chemical industry, but only 8% higher in all-manufacturing. This may reflect a preponderance of relatively menial job assignments for women in chemical concerns—a situation that's likely to continue for some time. Men receiving college degrees in chemistry and chemical engineering outnumber by about 8 to 1 the women preparing for professional careers in this field.

**Payroll Advantage:** Although many companies and most labor unions have adopted the suffragettes' principle of "equal pay for equal work," women are still playing second fiddle, remuneratively. While the median income for all male employees rose by 228% from 1939 to 1951, the women's median moved up by only 145%. Median pay in the latter year was \$3,083 for men, \$1,361 for women.

Marriage and maternity are keep-

### Distaff Data

(Women employed in chemical industry)

	Mar. 1950	Mar. 1951	Mar. 1952	Mar. 1953
Total employment	871,000	748,000	761,000	761,300
Women employed	115,100	134,400	143,700	146,400
Per cent women	17.2	17.9	18.8	19.2
Increase in employment	{ Men Women Total	57,700 19,300 77,000	3,700 9,300 13,000	-2,400 2,700 300
		Women	Men	
Industrial inorganic	6,000	71,600		
Industrial organic	32,500	181,400		
Drug & med.	39,200	62,100		
Paints, pigments	10,300	63,500		
Fertilizers	1,700	31,200		
Fats & oils	3,000	56,200		
Other chemicals	35,800	129,000		



## Turkeys to the Lucky

CARBIDE AND CARBON'S annual turkey shoot in Texas City last week served up one hundred Thanksgiving dinners to lucky prize winners. Luck wasn't the sole

criterion for winning: skeet- and trap-shooting enthusiasts came in for a share of the loot. An extra lure: free barbecue dinners all around.

ing fewer women out of industry. In 1940, just 36.4% of women in the working force were married, and only 10.8% had children younger than 18 years; but in 1952, those figures were up to 55.0% and 28.1%.

Both World War II and the Korean struggle have shown chemical companies that women can make all the difference in meeting emergency production quotas. And recent BLS data indicate that many women who were taken into the chemical industry on an emergency basis since 1941 have been given permanent status in preference to many men.

## EXPANSION . . .

**Polyethylene:** Monsanto's first polyethylene plant at Texas City won't be onstream until the last quarter of 1954, but company officials are already planning for a 50% increased capacity in 1957. When first word came out last March concerning Monsanto's plans, capacity was set at 66 million lbs./year; now the target's 100 million within 3½ years.

**Coke:** Sharon Steel Corp. is planning to build a by-products coke plant at its Roemer Works, Farrell, O., as part of a five-year development plan. Designed to cost about \$16½ million,

the company reports it's building about 75 by-product ovens, has received a tax write-off for the project at 85%.

**Petrochemicals:** Petrocarbon Chemicals, Inc. will build a processing plant outside Dallas, Tex., to make end-product synthetic chemicals. Cost of the initial unit: \$1 million. Plant design is by Tears Engineers, Dallas; first products expected include naphtha fractions (such as toluene, benzene and zylene), which will be marketed in the Southwest and Midwest, primarily to the paint, varnish and lacquer trades.

**Lithium:** American Potash & Chemical Corp., Los Angeles, is broadening its line of lithium products with the addition of ores from a new source in Africa. Under agreement with Bikita Minerals, Ltd. (managed by Selection Trust, Ltd., London), the company will import lepidolite and petalite ore mined near Fort Victoria, Southern Rhodesia, to supplement its Searles Lake lithium supplies.

**Uranium:** Excited prospectors claim to have found new richer deposits of uranium ore in Fremont County, Wyo. No assay tests are yet available, but courthouse clerks in Lander, Wyo., say they're swamped with claims—

"many of which are sure to be overlapping."

"We have over 500 claims now," says County Clerk Fischer, "and some of 'em look pretty crowded: I wouldn't be a bit surprised if a lot of folks have filed on the same land."

**Dry Ice:** Brea Chemicals, Inc. (a subsidiary of Union Oil Co.) will build a \$750,000 dry ice plant next to its present ammonia plant east of Brea, Calif. Construction will begin immediately; completion by next summer is scheduled.

## COMPANIES . . .

Certificates of necessity, issued last week, include:

- Jones & Laughlin Steel, Cleveland, metallurgical coke, \$499,300, 45%.

- Ford Motor Co., Dearborn, Mich., coke and by-products, \$185,380, 35%.

- Standard Chemical Products, Charlotte, N.C., textile finishes and oils for nylon, \$498,000, 25%.

- Allied Chemical & Dye, New York, railway transportation of chemicals, \$735,000, 75%.

- Allied Chemical & Dye, Nitrogen Div., Hopewell, Va., nitro-phosphate fertilizer, \$7,000,000, 75%.

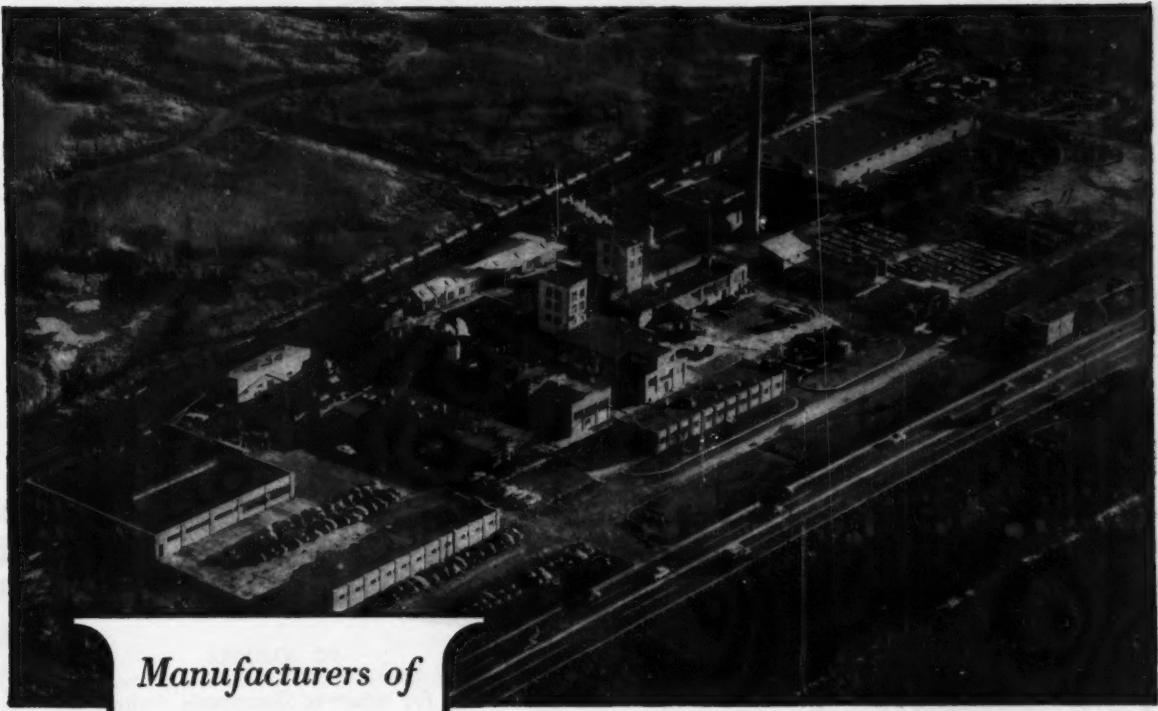
- Shippers' Car Line Corp., New York, railway transportation of petroleum and chemicals, \$4,000,000, 70%.

- Lake-River Terminals, Argo, Ill., public storage of liquid chemicals, \$93,585, 40%.

- Ethyl Corp., New York, railway transportation of petroleum products, \$465,000, 70%.

**Zirconium Corp. of America** has been formed to manufacture zirconium oxide, other zirconium compounds for use in the glass processing, refractory materials and ceramics industries. Pilot-planting has been completed, and company officials say full-scale production at Solon, O., should be moving by Jan. 1.

**Blaw-Knox Co.'s** chemical plants division has been awarded the contract to build a catalytic reforming plant for Anderson-Prichard Oil Corp., Oklahoma City, at its Cyril, Okla., refinery. Material purchasing is already under way, with field construction slated to start in two months. Cost of the new plant has not been revealed, but it's estimated that work will be completed early in 1954. In addition to high-octane motor gas, the "catformer" will produce aromatic chemicals, hydrogen.



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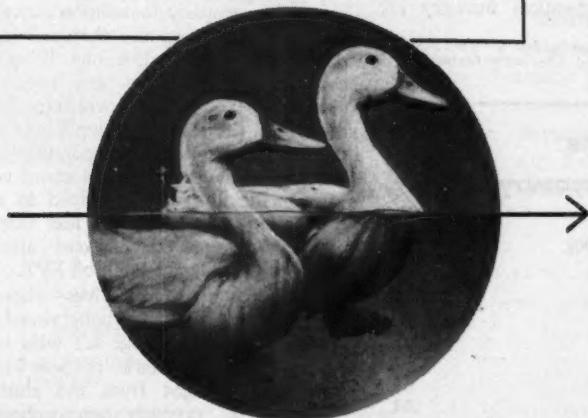
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## Sign of the Times

Corporate giving in the chemical industry—having spiraled steadily upward over the past few years—may be finally leveling off. The reason's twin-barreled: probable elimination of excess profits taxes on Jan. 1, 1954, and a growing awareness of the attractions of company foundations to handle all giving problems in terms of its value to community relations.

Under our present corporation tax laws, the average company finds itself able to part with 5% of profits before taxes for educational and charitable gifts, but the difficulties involved are apt to be immense. Often, nets aren't calculated until late in the fiscal year—that means hasty giving, often with no time to investigate causes or institutions. Worse still: if it looks like only a matter of disbursing cheap dollars, community relations suffer—the corporation receives little credit for its philanthropy.

A further drawback: small plants in relatively modest circumstances bearing a well-known corporation name are hard put to live up to company reputations; what they give, though perhaps completely compatible with what the plant grosses—doesn't stack up with what the public expects. Bushel baskets of mail pour into the home office; everybody concerned is distressed.

To handle the situation, more and more companies in the chemical industry are turning to company foundations to ease the headaches involved in corporate giving. Selling points are numerous:

- By establishing a foundation, the average company can happily point out to stockholders that it has cut the cost of charitable gifts (*see box*). Cheap dollars put into a foundation this year, for example, can be considered a prepayment of future donations at a reduced cost. Take for example a company that annually

contributes \$500 to the Red Cross, cancer, etc. At top excess profits rates, if it puts \$10,000 into a foundation, the net price tag will be \$1,800. (And as tax rates rise, the cost gets steeper). But a 5% yield on its \$10,000 investment will do much to ease future costs; at a 50% tax rate, could save the company a net of \$250 per year. That, say the experts,\* means a 13.8% return after taxes on the \$1,800 net cost of the company's investment in the foundation.

- It's often possible, report some chemical companies, to take advantage of corporate gifts in terms of returns which directly affect the firm's line of business. Perhaps, for example, research may be supported, as in the case of Du Pont—which gives grants to 15 universities for fundamental research, or Chas. Pfizer, which sponsors medical scholarships, or Koppers, which supports a professorship in organic chemistry.

- Employee relations may be strengthened (as Phillips Petroleum does)—with the donation of scholarships for employees' children.

- Community relations can be bolstered (and listed as community welfare in the firm's home town) by donating public playgrounds, parks, etc.

- Customer relations can be enhanced—by grants of scholarships to colleges in areas supporting the firm's line of business (e.g., agricultural colleges in farm belt fertilizer-consuming regions).

- Company skills can be gained—as in the case of various companies who have established foundation-backed schools to train wounded veterans.

From the charitable organizations' point of view, the advantages to be gained by the adoption of foundations in the chemical industry are

\* See Business Reports, Inc.'s "Tax Planning for Foundations and Charitable Giving."

### \$1 Deposited in a Corporate Foundation Costs The Company Treasury . . .

In 1953	No excess profits tax (income over \$25,000)	.48
	70% ceiling excess profits rate	.30
	82% ceiling excess profits rate	.18
In 1954	Income over \$25,000	.51%
In 1955	Income over \$25,000	.53

likewise numerous. Most important, however: high tax rates have hit the individual's ability to support their work; business (and particularly rapidly expanding industries) is the logical candidate to fill the breach.

But companies without any corporate-giving pool are prone to be erratic. Contributions in good years, it's true, are apt to go the 5% limit. They're lumped, however, at the end of fiscal years; and in bad years (just when a charitable institution needs the greatest lift) drop off with decreasing sales.

Foundations, say Community Chest and Red Cross representatives, nicely circumnavigate this problem. They make possible a "peak and valley" fund—by which the donor always gives the maximum deduction to the foundation, but the organization benefiting can gear its handouts so as to store up a reserve in good years to tide itself over the poor ones.

From any angle—that of the company, the stockholder, or the beneficiary—the gains to be chalked up in intelligent planning through foundation-giving are immense. The company avoids any aspersions that may be cast upon its generosity—so oft-heard these days as death hovers over the excess profits tax. The complete punch is lost, for example, when (as in Chicago recently) a large check is received for hospital refurbishing and a trustee is quoted as having "presumed excess profits taxes were responsible for the belated gift."

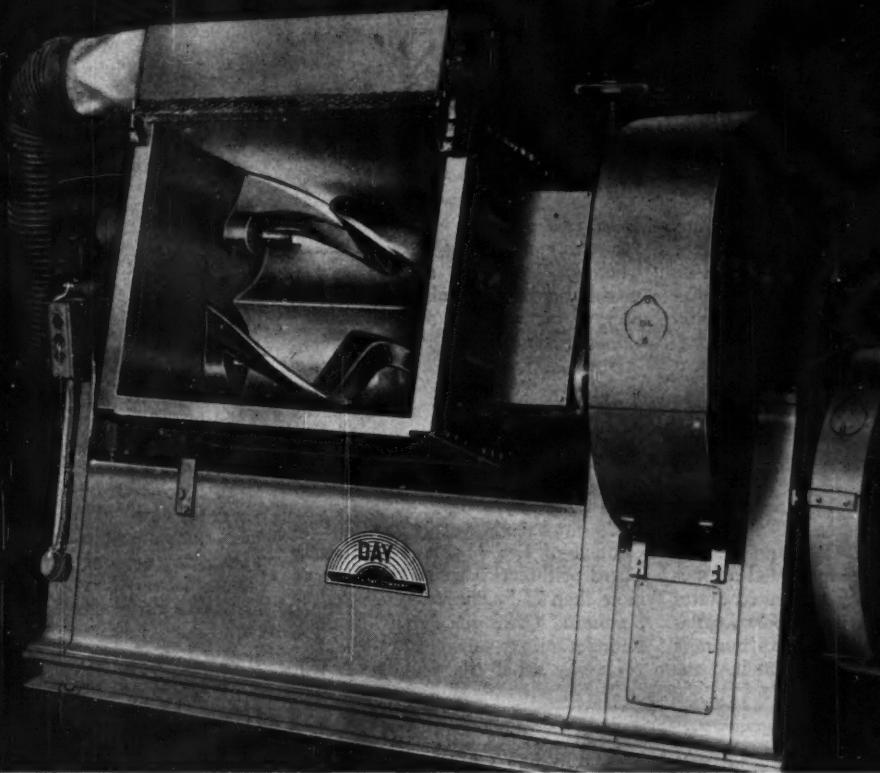
Orderly and leisurely allocations of gifts can be made if funds are put in a foundation Deep-Freeze; company executives are by-and-large cushioned from a deluge of requests for contributions. Reputable organizations reap rewards, get a bigger share of the take; fly-by-night outfits can't easily slip into line.

There's still much to be learned about the company foundation movement now invading the chemical industry in earnest. But one thing's certain. Unless there are radical changes in U.S. tax laws over the next few years, the company foundation is the cheapest method of corporate giving. Both donor and donee stand to gain financially; dollars placed in a foundation now will cost less than everybody hopes they'll cost after 1953 rings the death knell on EPT.

From company executives whose tried corporation foundations already comes a single warning: It's wise to state the foundation's purpose in broad terms right from the start. Stockholders, properly approached, make the firmest allies.

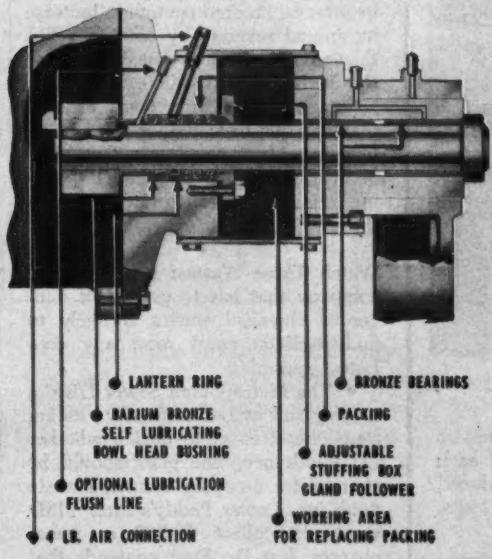
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**"Trade not Aid"**

Chemical officials this week pondered the effect on tariffs of last week's testimony before the Randall Commission. The Commission heard nineteen Americans and nine Europeans outline their ideas as to what changes should be made in United States economic policy. In its Paris hearings the Commission heard an almost unanimous appeal for lower and simplified U.S. tariffs. "Trade not Aid" was the constant theme by both American officials and Europeans, but there was considerable difference in emphasis with each group:

- Acting Chairman Butler, of the Committee of Ministers on Organization for European Economic Cooperation, saw United States tariff reductions as a simple, practical way of solving Europe's dollar shortage.

- Baron Jean Charles Snoy of Belgium, Chairman of the Steering Board for Trade of OEEC, specifically urged revision of U.S. laws applying to ocean transport to give European ships better chance to compete.

- High Commissioner Conant, and other American officials, spoke along general lines. They suggested a long-term policy of lowering United States tariffs and simplifying import regulations to encourage European business men to invest time and money ex-

ploiting American markets without fear of having those markets later taken away by a tariff increase.

**Where There's Smoke**

The smoke and fumes of the big battle to control air pollution enveloped municipal officials in three cities this week:

- Mayor Roy Hofheinz of Houston found himself under fire when he temporarily dropped plans for Houston's cooperation in city-county pollution control.

- Mayor Fred Peterson of Portland, Ore., was charged with "having no desire to control nuisances and health hazards." When he shelved a proposed smoke-fume abatement code, four of his seven-man Air Pollution Committee resigned.

- On the other side of the fence, Vice-Mayor Warren Dorn of Pasadena, Calif., threatened to "sue all seven southern California oil refineries," to stop their production and collect for damages the city will assert have been caused by smog.

To aid Vice-Mayor Dorn, the City Council of Los Angeles, the County Board of Supervisors, and a group of more than 75 businessmen formed the Southern California Air Pollution Foundation.

Exactly what the foundation will

do has not yet been outlined. Said Asa Call, president of Pacific Mutual Life Ins. Co. and chairman of the unit's kick-off luncheon: "This should be a program carried out over a period of several years without fear or favor. If we come up with an answer and someone gets hurt that's too bad."

Meanwhile, in New York City the Board of Air Pollution Control is asking the public for "constructive suggestions in writing" to aid in enacting pollution control legislation that will go into effect in about three months.

Real estate representatives at a hearing conducted by the board objected particularly to a proposed new regulation that would require that all incinerators be supplemented with an approved type of settling chamber or filter. It was estimated that the change would cost property owners a total of \$6 million.

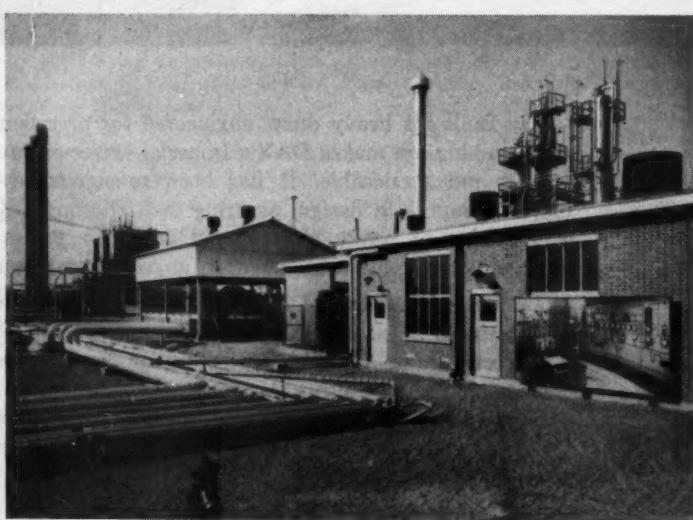
And Denver reports that the air is clearing over the mile-high city. Residents and business firms have spent more than \$750,000 during the last year to curb air pollution. Manufacturing smoke has been all but eliminated, leaving only the smoke from steam locomotives to becloud the mountain air.

**L E G A L . . . . .**

**Natural Gas Bills:** Court decisions are determining the rates that chemical and other industrial companies must pay for natural gas. In Charleston, W. Va., the state supreme court unanimously refused to review a State Public Service Commission order in a rate case brought by Amere Gas Utilities Co. Amere had asked that its rates be boosted enough to increase its annual revenue by \$500,462, but the commission ruled that the increase should be only \$183,000. In Helena, Mont., a state district court ordered that receipts from higher rates in effect for Montana Power Co. since Sept. 1 should be impounded pending adjudication of a protest filed by the state's attorney general.

**Watch Those Wastes:** Any industrial company that has to get rid of dangerous chemical wastes is likely to find itself in court most any day. Latest examples:

- The Metropolitan Sewer District is filing suit at Louisville, Ky., asking state circuit court to decide whether Du Pont's neoprene plant should be charged for dumping industrial waste fluids into Lower Paddy's Run. MSD wants to collect \$2,500 as sewer charges, but Du Pont contends that



**Sitting Out a Plant Tour**

ESSO'S NEW REFINERY at Antwerp, Belgium, is sporting the latest in plant tour luxuries. So that visitors are not obliged to leave their cars while being shown

around the refinery, a life-size photograph of the interior of each building is faithfully reproduced outside. The system speeds visits, is good community relations.

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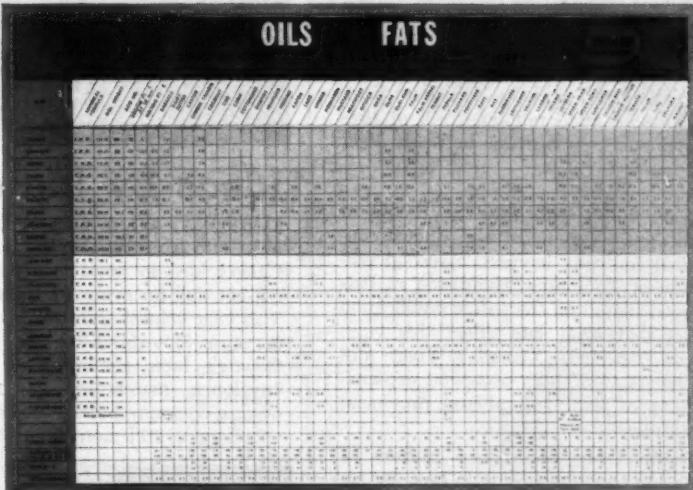


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You're welcome to a copy of this new Drew Oils and Fats Chart. Just drop us a postcard. But most important, if you're manufacturing Paints, Varnishes, or any one of a variety of Soaps, Textile Oils or Tanning Oils, ask for complete data on Drew SOYA and LINSEED Fatty Acids. Approximate Chemical Composition and Data is shown in the table below.



## LINSEED & SOYA COMPOSITION CHART

APPROXIMATE CHEMICAL COMPOSITION AND DATA	MYRISTIC (C 14)	PALMITIC (C 16)	STEARIC (C 18)	OLEIC (C 18)	LINOLEIC (C 18)	OTHERS	FFA	TITRE °C	IODINE VALUE	ACID VALUE	SAP. VALUE	APPROXIMATE COLOR		
												LOVBOND	GARDNER 1933	
WECOLINE S SOYA FATTY ACID	TR	9.5%	2.5%	32.0%	52.0%	—	4.0%	99 to 102	22 to 24	125 to 140	197 to 203	197 to 203	10.0/1.5 Max.	2.0 Max.
WECOLINE S-2 SOYA FATTY ACID	TR	11.0%	3.0%	28.0%	51.0%	7.0%	—	99 to 107	24 to 28	120 Min.	197 to 213	197 to 213	35.0/10.0 Max.	6.0 Max.
WECOLINE L LINSEED FATTY ACID	—	6.5%	2.5%	18.0%	25.0%	47.4%	1.0%	99 to 101	22.0 Max.	175 to 192	197 to 201	197 to 201	10.0/1.5 Max.	2.0 Max.

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## BUSINESS & INDUSTRY . . . . .

Paddy's Run still is an open creek and not a sewer.

• At Asheville, N.C., a farmer is pushing a claim for \$10,000 on the ground that his 12-acre cabbage crop was lost to him because of contamination by seepage from "deleterious and poisonous substances." Health officials had branded the cabbage unfit for human consumption, and state superior court found that contamination resulted from leaks and over-flowing of a main sewer line.

**Tires, Too:** Eight Canadian rubber companies—five of which previously had been fined for operating a combine in restraint of trade on hoses and other mechanical rubber goods—now have pleaded guilty to conspiring to reduce competition in sale of rubber tires and tubes. The government prosecutor, arguing that the statutory maximum \$10,000 fine was "entirely inadequate," said the defendant firms had sold \$645 million worth of tires and tubes in Canada between 1947 and 1951.

**Law Books Out:** Two new books of interest to chemical and pharmaceutical company lawyers: a second edition of Toulmin's "Handbook of Patents," based on the patent codification act that went into effect this year; and Curran's "Canada's Food and Drug Laws," with texts and explanations of both federal and provincial statutes.

**Battle Over Beer:** Two makers of cooker enzymes for use in brewing are squabbling over who was first in this field (CW, Sept. 26). Brewers Scientific Laboratories, Rahway, N.J., has brought suit against Paul-Lewis Laboratories, Milwaukee, alleging that Paul-Lewis has "falsely represented to the brewing trade" that it was the originator of the enzyme brewing process; whereas, according to the petition, Brewers Scientific did the research that resulted in the discovery. Charging that Paul-Lewis has "caused confusion among brewers" and interfered with the Jersey firm's contractual relationships, the plaintiff is asking a permanent injunction, a disclaimer of priority by Paul-Lewis, and \$500,000 plus costs.

**Dusting Damages:** Dangers involved in reckless use of pesticides were illustrated in a recent Arizona lawsuit in which a rancher contended that crop dusting caused the death of four dairy cows and reduced milk production of other cows in his herd. Testimony indicated that DDT dusted on



### Ideas by Indirection

SURE WAY to lure company offerings into the suggestion box is Calco's idea to promise a Rowdy cut-out doll for every contribution. This year helpful hints are pouring in at a 38%-above-'52 clip, and Rowdy's face, smiling from pay envelopes, match folders, house organs, company bulletin boards, is encouraging still more suggestions.

Especially enthusiastic are workers' offspring—flush in the knowledge that a few simple words inscribed on a sheet of paper will produce another Rowdy doll—if Daddy only remembers to tuck it in the box. A further attraction: Calco's suggestion winners are photographed for bulletin board display; copies are offered for framing.



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Phone (MU 8-2370) or write our P-A Sales Dept. for further information and ask for our Bulletin M-102 on P-A Gas Scrubbers.

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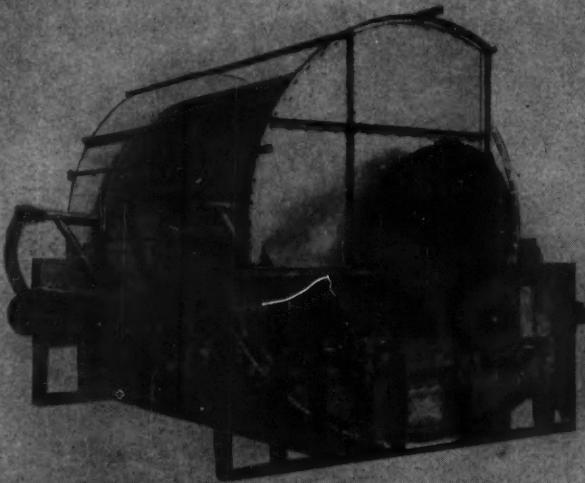
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### B & I. . . . .

neighboring cotton fields had drifted onto the rancher's land. He claimed a total loss of \$29,900, but the court held that damages should not exceed \$17,600, and the jury awarded a flat \$10,000.

### Right on the Brink

To Western observers, it's long been clear that a vital part of Japan's dream of returning to the fore of world trade markets has been the development of a well-integrated petrochemical industry. But generally as soon as the hope was expressed, it was discarded. The reason: a lack of the all-important item—oil.

This week, however, U.S. chemical industry representatives returning from recent Japanese Chemical Society meetings in Tokyo and Osaka, have reversed their field. On the one hand, they predict that the constant drive since the end of World War II to drill new deposits will pay off in the very near future ("it's likely that the Japanese will turn up relatively large deposits of oil"). And on the other, they say that in light of the types of processes now being installed in the islands, Japan will soon be taking a backseat to no one in quality of products being produced.

Japan now has only 10 refineries operating, is importing millions of barrels of oil annually from Saudi Arabia to supplement home-produced oil supplies (estimated at 100,000 bbls. daily). But eight new plants are currently in design or construction stages. Among the new equipment will be four UOP Platformers, catalytic cracking units and a wide selection of processes.

And more important over the long haul are plans under way for heavy manufacture of plastics, synthetic fibers, detergents. Universal Oil's research director, Gustav Egloff—a recent lecturer in Japan—estimates that Japan today is only some five years behind the U.S. in technical developmental work, says the nation's currently going all out to complete installation of five basic plants within the next few months to produce synthetic fabric materials.

First across the line: a plant turning out Saran—a boon to Japan's fish net industry, which has long suffered the hazards of rotting, shrinking, mildewing, and stretching difficulties.

All indications point to "startling" developments in the months ahead—especially with growing pressure on oil exploration from automotive manufacturers—whose interest in new deposits is obvious and becoming increasingly powerful.

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## BUSINESS & INDUSTRY . . . . .

	Population Growth 1940-1950	Transportation Distance to Barge or Seaport	Fuel Reserves			Undeveloped Hydro-Electric Power (Thousands of Kilowatts)	Principal Minerals
			Coal (Thousands of Short Tons)	Petroleum (Millions of Barrels)	Natural Gas (Millions of Cubic Feet)		
Arizona	50.1%	Tucson to Los Angeles, 502	....	....	....	3,476	Ba, fluorspar, garnet, Cu, Au, Pb, Mg, Mn, Mo, Ag, W, quartz, U, Zn
Idaho	12.1	Boise to Portland, 491	....	...	....	8,849	Sb, Ba, Cu, Au, Pb, Ag, W, Phosphate rock, W, Zn, U
Montana	5.6	Butte to Seattle, 667	2,362,000 Bituminous	111	797,361	6,935	Cu, fluorspar, Au, Pb, Mn, Ag, Phosphate rock, pyrites, W, Zn
Nevada	45.2	Las Vegas to Los Angeles, 335	....	...	....	111	Sb, Ba, Cu, fluorspar, Au, Fe, Pb, Mg, Mn, Hg, Mo, Ag, S, W, Zn
New Mexico	28.1	El Paso to Houston, 827	10,947,700 Bituminous	592	6,990,670	209	Ba, Cu, fluorspar, Au, Fe, Pb, Mn, Mo, K, Ag, Mg, Zn
North Dakota	3.5	Fargo to Kansas City, 722	600,000,000 Lignite	?	?	652	....
South Dakota	1.5	Rapid City to Kansas City, 772	1,020,000 Lignite	...	....	1,279	Cu, Au, Pb, quartz, Ag, Sn, Zn
Utah	25.2	Salt Lake City to Los Angeles, 783	88,184,000 Bituminous	22	84,752	1,297	Cu, fluorspar, Au, Fe, Pb, Mn, Salt, U, Mo, Phosphate, K, quartz, Ag, W, Zn
Wyoming	15.9	Cheyenne to Kansas City, 702	13,234,950 Bituminous	841	2,194,989	785	Cu, Au, Fe, Pb, phosphate, jade, rare earths, Ag, S, W

THE WEST'S DILEMMA: Natural resources plentiful but remote.

## Few Chemical Homes on the Range

"Spread out," the federal government is urging industrial companies, "into the wide open spaces, so that all manufacturing isn't concentrated in a few big communities that could be wiped out by a handful of hydrogen bombs" (CW, Oct. 17).

For the chemical industry, this is easier said than done—chiefly because most chemical products can't bear heavy transportation costs. You're in business if you can set up your plant near your markets—usually the big population centers in the Northeast—or if you can operate at a site that's near your raw materials source and is also accessible to cheap, water-borne transportation.

But you're living dangerously if you dare to produce chemicals in the big, land-locked Western states that are remote from the nation's populous areas, although some of those states do have certain natural assets that might appeal to various kinds of chemical companies, particularly those that have special markets in the West and those that feel they should have extra plants to keep production up in case of emergency.

**Where Buffalo Roam:** For chemical firms looking for a home where buffalo roam and deer and antelope play, CHEMICAL WEEK's statistical spyglass scans those nine Western

states that have less industry than the rest of the 48, finds facts that merit serious consideration in some quarters.

As is made clear in the table on this page, there's no getting away from the fact that the principal cities in those nine states are a good many ton-miles away from big markets, and the shortest distance to a harbor is more than 300 miles. But it might be possible, in some instances, to take such acute advantage of the region's natural resources that the higher freight rates would be at least partially offset by lower production costs.

One thing that stands out in giving these Western states the once-over is that they offer plenty of elbow-room, even subtracting all the acres occupied by mountains, canyons, national parks and man-made reservoirs. Much of the government-owned "marginal land" is already under lease for grazing and mining, but even so you don't have to worry much about being hemmed in by neighboring plants—according to the latest Census of Manufactures, the "density" of industrial establishments in these states ranged from one (Nevada) to nine (Utah) plants per thousand square miles.

**Wealth of Minerals:** Probably the biggest assets of the West are its great mineral deposits, including much

of the nation's petroleum and natural gas reserves. There's sure to be opportunity here for expansion of certain petrochemical operations. Four of these states have extensive deposits of soft coal, and North Dakota has perhaps more lignite than any other part of the world.

While the coal, oil and natural gas could provide vast quantities of feedstocks for plants making organic chemicals, the West also has heaps of raw materials for inorganic products—fluorspar, phosphate rock, sulfur, potash, soda ash, silica.

In addition to the energy that could come from the coal, oil and gas, these nine states have considerable undeveloped hydroelectric power, and also uranium deposits that—possibly 15 years from now—could be fueling reactors generating large amounts of electric power.

**Water Voracity:** There's no denying the fact that in many parts of the West, water is a scarce item; and throughout this whole region, it's legendary that disputes between contentious water-users are a major source of litigation. Also, much of the water that can be found there is alkaline or brackish.

But it's equally true that some of the nation's biggest rivers gush through these states: the Colorado,

## BUSINESS & INDUSTRY . . . . .

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★ As an example of the ability of Chemi-Form specialists, we just recently developed an Aerosol package for penetrating oil. This particular problem had never before been licked by Aerosol packaging. Now penetrating oil can be more successfully merchandised since the new package allows previously inaccessible places to be easily reached.

### ★ SPECIALISTS WORK FOR YOU

We have had wide experience in the performance of cans, valves, active ingredients, and propellents and have accumulated a great deal of data on formulations. Exhaustive laboratory work is done to eliminate the possibility of container or valve corrosion, of the materials hydrolyzing, and of side reactions occurring that usually result in corrosion of parts or buildup of unduly high pressures.

### ★ SMALL TEST RUNS AVAILABLE INEXPENSIVELY

When an assignment is given us to develop an Aerosol package we will cooperate with you in conducting a test run. This is done at low cost to demonstrate the effectiveness of the package and to give you an idea of the merchandising value.

If it can be put into an AEROSOL package we can do it.

Our assignments have given us experience with hard-to-package waxes, oils, and silicones. Also for critical compounds in drug, cosmetic, and chemical fields.

Complete compounding facilities available.



which carved out the Grand Canyon; the Missouri, which has flooded numerous farms and cities nearly every year; the Rio Grande, recently in the news because of the dedication of huge Falcón Dam (CW, Oct. 31).

These streams and their major tributaries—the Snake, the Yellowstone, the North Platte, the San Juan, and the Salmon—are being harnessed through construction of private- and public-financed dams that will tend to even out the flow of the rivers, which now fluctuate between the raging torrent stage in the spring to little more than trickles in extreme dry seasons. While much of the water from these streams is already allocated (irrigation farming, community water supply, and swimming-boating-fishing recreation), it would appear that many localities will welcome chemical plants that won't demand an exorbitant amount of fresh water.

**Not So Lonely:** Radio-cowboy crooners still plead to be carried back to the lone prairie, but the fact of the matter is that the prairies aren't nearly so lonely as they were in the days of Buffalo Bill Cody. It's true that the nine states under discussion, with 30% of the nation's total area, have less than 4% of the total population. Still, more than 5 million souls is no mean aggregate, and there has been a sweeping immigration into some of these states (see table). If there aren't enough workers in these states for industry right now, it can be expected that the combined appeal of steady work and attractive climate will draw more.

But when all is said and done, the blunt fact remains that while these scenic lands can boast that their skies are not cloudy all day, the current situation is that the economic sun doesn't shine on them very much, as far as chemical production is concerned. Even the West's mining industries—on which a Western chemical industry presumably would be based—are frequently steeped in competitive difficulties, with many imported minerals reaching New York and San Francisco at less than prices of domestic ores; and schemes calling for 1,000-mile conveyor belts and the like are usually considered as being a bit too far on the grandiose side.

Some of these states have been sending out chamber-of-commerce delegations that urge industrialists to "build that next new plant out West" (see picture on cover). No doubt opportunities are there for some chemical ventures, but the economic—if not the physical—horizon is limited.

### Coumarin Cast Out

Chocolate and cocoa are destined to continue their coumarinless existence, it appeared this week. The U.S. Food & Drug Administration, after its recent hearings (CW Newsletter, Oct. 3), has issued a tentative order against coumarin's use, upholds the contention that coumarin should be classed as "a poisonous and deleterious substance, not suitable for use in foods."

FDA now proposes that the standards for cacao products be amended by omitting coumarin from the list of approved flavoring agents, and that ethyl vanillin be added to that list. The latter compound is said to have even more of a vanilla taste than vanillin itself.

Anyone who appeared at the hearing is entitled to file written exceptions to this tentative order; but unless such exceptions are forthcoming and are persuasive, coumarin is definitely out of the chocolate and cocoa business.

### FOREIGN . . . . .

**Plastics / West Germany:** The West German plastics industry is now producing 250,000 metric tons of plastics annually—a figure exceeded only by the U.S. plastics industry. Exports are also at an all-time high—amount to an equivalent of \$36.4 million thus far in 1953 (including both raw plastics and manufactured plastics goods).

**Petrochemicals / Israel:** Kadimah Chemical Corp. is building a \$300,000 petrochemical plant in Haifa, Israel, to manufacture detergents, fatty acids.

**Penicillin / Indonesia:** Reports reaching New York from Amsterdam state that a Dutch firm is planning to build a penicillin plant at Bandung, West Java, Indonesia. Involved in the plan: Bandung Quinine Factory—which nearly went out of operation during World War II, partly because quinine could not be exported during the Japanese occupation, partly because better antimalarial drugs were developed during the war.

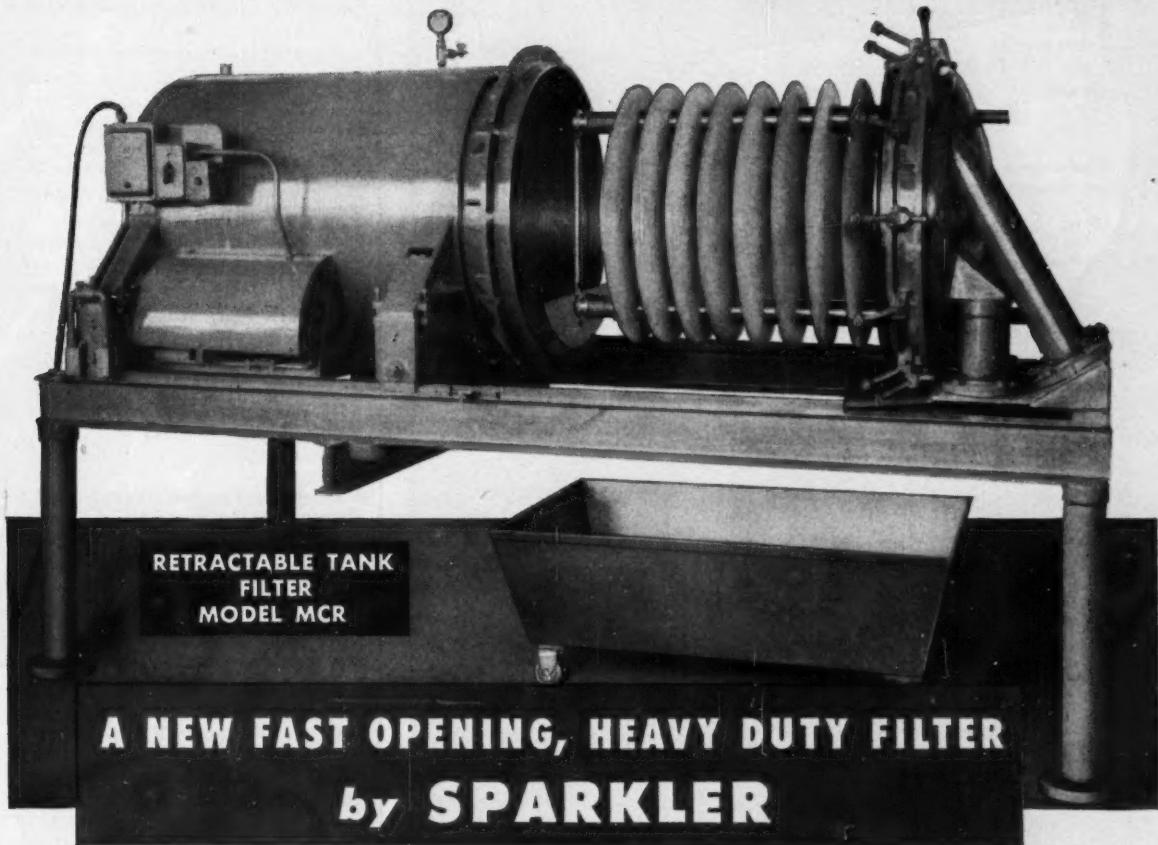
With Indonesian quinine exports at an almost negligible level, Bandung Quinine is presently producing only for home consumption, hopes to convert its biggest plant for penicillin production within the not-too-distant future.

**Chlorine, Caustic / Israel:** Electro-Chemicals Industries, Ltd. will start construction work on its \$1.6-million

# BIG NEWS AT THE EXPOSITION

SEE BOOTH No. C-54

A New 1,000 sq. ft. Push Button Control Filter will be demonstrated



**60 Second opening or closing without disconnecting piping.  
Available in sizes from 100 to 2000 sq. ft. filtering area.**

This new retractable tank model MCR filter opens up a new phase in filtering that will lower the cost materially in many industrial fields.

One movement of a handle, a flip of a switch and the retractable tank moves back, stopping automatically, leaving the plates exposed for hand cleaning. All in less than 60 seconds. Pipe connections are all in the stationary filter head so no disconnecting of piping is necessary. This gives you the fastest action, time-saving, labor-saving tank opening ever engineered in a filter.

Jet spray tubes can be supplied in this filter with automatic breaking head seal for water supply. With

the jet spray the cake can be washed off with pressure spray, backwashed, or a combination of jet spray and backwashing employed for cleaning the plates.

The retractable tank Model MCR Filter fills the need for a large capacity filter that can handle heavy residue fluids and for removal of large percentage solids. The plates can be spaced any distance apart to accommodate a heavy or thin cake depending on requirements.

The circular double surface screen plates are reinforced to withstand extremely high filtering pressure without danger of collapsing.

Filter tanks can be supplied in mild steel, stainless steel, or other metals to meet chemical requirements. Tanks can be rubber lined or plastic lined for corrosion resistance. Each filter including valves and piping is engineered to perform the job required.

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symbol of service*



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Ammonium Chloride

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*ICI Trade Name.*

*This is only a partial listing of the items we offer.*

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*Supplying many chemicals to American industry.*

### B & I . . . . .

chlorine and caustic soda plant in Acre, Galilee, before the end of the year. Capacity: 1,700 tons/year each of chlorine and caustic. Plans for further increases (to 2,600 and 3,000 tons, respectively) are under consideration; initial units are expected to be completed within 12 months.

**Nitrates/Chile:** Production of nitrates in Chile has been declining steadily over the past few years, and some circles doubt whether this year's production goal (1,650,000 metric tons) will be met. A 57-day strike recently at the Anglo Lautaro plants (producing 62½% of the entire Chilean output) has seriously changed export plans, means that U.S. importers (who took 24.4% of all nitrates from Chile last year) will have to look around for other supplementary sources of both sodium and potassium salts.

### L A B O R . . . . .

**Productivity Parallels Wages:** American companies pay the highest wages in the world, but they also get the most out of their employees, according to a new study by Stanford Research Institute. In fact, SRI finds, a graph of wages in the western nations would bear "a close resemblance" to a productivity graph; but the researcher feels that the wage rates are more likely an effect, rather than a cause, of productivity differences.

Expressed as average of value added (in U.S. dollars) per worker per year, productivity figures for 1950 came out like this: U.S., \$6,250; Canada, \$4,875; Sweden, \$3,060; United Kingdom, \$2,810; Denmark and Norway, \$2,310; and so on down the line to Spain, \$937.

**Voice in Community:** One chemical union raising its voice in community affairs is District 2 Council, United Gas, Coke & Chemical Workers (CIO), at Niagara Falls, N.Y. At the council's recent 11th annual convention, delegates demanded action to keep industrial plants from dumping harmful wastes into the Niagara River; asked that the city council investigate the local Air Pollution Control Board; and urged a program to bring more electric power and more chemical plants into the Niagara Falls vicinity.

**No World Union:** What appeared to be a start toward formation of a worldwide chemical labor union now seems to have evaporated, leaving only an oil-union residue. The Oil Workers

# STAR PERFORMERS

From coast to coast, Powell Valves have won enthusiastic approval. For every Powell Valve is a star for outstanding performance. They have a record of dependability since 1846.

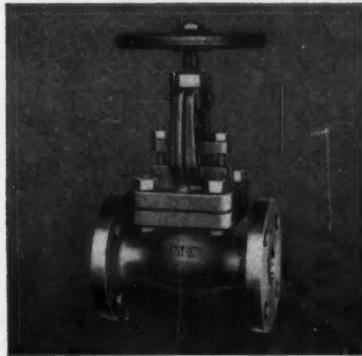
Small wonder that Powell Valves have made such a hit

through the years. Powell has probably done more valve research, solved more valve problems and makes more types of valves than any other organization in the world.

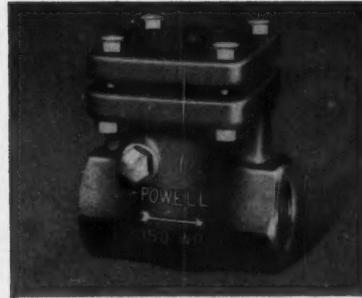
We're sure that you will be enthusiastic about Powell Valves too once you see how they perform. Following are just a few members of the Powell all-star cast of valves which are available through distributors in principal cities. If a distributor is not located near you, just write us. We'll be pleased to tell you more about these valves—and our complete line.



**STAR ATTRACTION.** Be sure to visit the Powell Valves booth, Number 26, at the 24th Exposition of Chemical Industries, November 30th to December 5th, in Philadelphia at Commercial Museum and Convention Hall.



**ALUMINUM O.S. & Y. GLOBE VALVE** (Fig. 2445) for 100 pounds W.P. at 350 F. Stainless steel (18-8) stem, composition disc, integral seat. Stem rises through bronze bushing in upper yoke. Sizes  $\frac{1}{4}$ " to 3", inclusive.

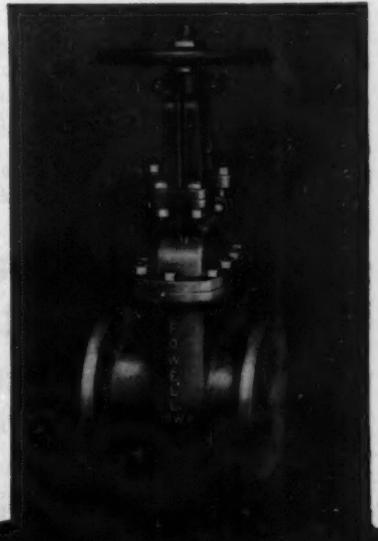


**SWING CHECK VALVE** (Fig. 2341) for 150 pounds W.P. Sturdily built for severe service. Bolted flanged cap. Disc is hung on 5° angle to permit full unobstructed flow. Sizes  $\frac{1}{4}$ " to 3", inclusive.

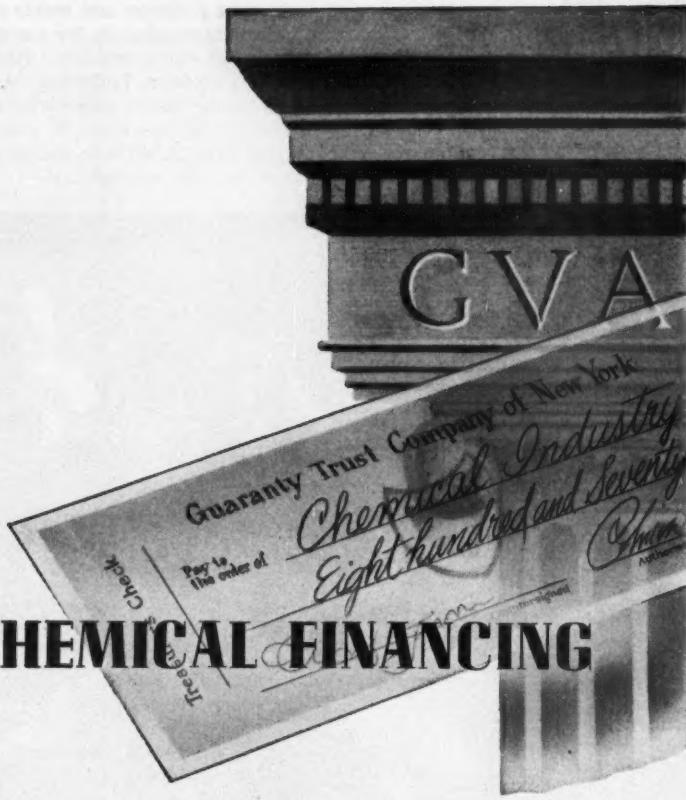


**FLUSH BOTTOM TANK VALVE** (Fig. 2310) for 150 pounds W.P. Designed for convenient and fast draining. Disc opens into valve. Also available with disc opening into tank (Fig. 2309).

**STAINLESS STEEL O.S. & Y. GATE VALVE** (Fig. 2453) for 150 pounds W.P. at 500 F. Interchangeable solid or double wedges are precision-fitted and accurately guided throughout entire travel. Sizes 5" to 30", inclusive.



P V



## CHEMICAL FINANCING

Bringing the many new and better products of chemical technology through the stages of research, development, testing, distribution and marketing involves something more than managerial and technical skills. It involves financing, too.

Guaranty Trust Company of New York has worked with important chemical manufacturers for many years. Because of this experience, it can provide an understanding banking service that is prompt and efficient.

Our officers are available to discuss questions of mutual interest.

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### B & I . . . . .

International Union (CIO) announced last month that it was helping to organize a "World Federation of Oil, Chemical & Allied Unions" under the banner of the International Confederation of Free Trade Unions. A CW check this month brought out the news that the word "chemical" is to be dropped from that title. It was included at first, a union spokesman explained, because petroleum refinery workers are members of chemical unions in Germany, Italy, and some other countries.

OWIU also keeps plugging away at coordinating oil union activities in this country. The National Coalition of Oil Unions, in which OWIU is the kingpin, will hold a full meeting Dec. 6 in New York. On the agenda: layoffs, contract work, shorter work week.

### KEY CHANGES . . .

Thomas H. Vaughn, to vice-president in charge of research and development, Colgate-Palmolive Co., Jersey City, N.J.

Arthur D. Angell, to vice-president, western division, Dewey and Almy Chemical Co., Cambridge, Mass.

J. E. Troyan, to vice-president and general manager, and Don W. Ryker, to assistant general manager, Matholin Corp., Baltimore, Md.

Harry C. Millerburg, to president, Loven Chemical of California, Inc., Newhall, Calif.

Edward M. James, to technical advisor, Lever Brothers Co., New York City.

Carl E. Barnes, to assistant to the vice-president in charge of central research, Minnesota Mining & Manufacturing Co., St. Paul, Minn.

F. A. Strovink, to eastern regional manager, Paper Chemicals Dept., American Cyanamid Co., New York City.

H. Stuart Auvin, to director of coke research, Semet-Solvay Div., Allied Chemical & Dye Corp., Ashland, Ky.

Charles D. Thurmond, to assistant to the president, Lac Chemicals, Inc., Culver City, Calif.

Ronello B. Lewis, to vice-president and comptroller, Matheson Chemical Corp., Baltimore, Md.

George N. Nickles, to coordinator, Textile Dyestuff Div., Hilton-Davis Chemical Co. Div., Sterling Drug, Inc., Cincinnati, O.

# which OF THESE MATERIALS IS BEST FOR your CORROSION PROBLEMS?



## • ACE HARD RUBBER LININGS

Economical, universal protection against all alkalies, metallic salts, practically all inorganic acids, hydrochloric acid any strength, sulphuric to 50%, nitric to 20%, phosphoric to 75%. Good to 160° F. — sometimes higher. Ask for details of Ace two-layer lining system.



## • ACE SOFT RUBBER LININGS

Corrosion resistance near that of hard rubber . . . recommended where abrasion, mechanical abuse, or temperature variations are problems. At left is 12,000 gal. outdoor acid storage tank, lined with soft rubber.



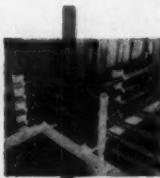
## • ACE SYNTHETIC RUBBER LININGS

Many types available for handling oils, gasoline, other organic corrosives. Often used for higher heat resistance. Evaporator head at left, for instance, works at 212° F.



## • ACE MOLDED HARD RUBBER PARTS

Many parts can be produced most economically by molding. This chlorine gas cell cover is example. Many large shapes can also be fabricated by special hand-wrapping process.



## • ACE HARD RUBBER PIPE AND FITTINGS

Two types: (1) All hard rubber, threaded pipe for service to 50 psi., 120° F. (2) Rubber-lined steel, flanged pipe for pressures to 125 or 250 psi. Have same fine chemical resistance as tank linings.



## • ACE SARAN

Saran pipe, tubing, fittings, diaphragm valves, special molded parts, etc., have unusual resistance to chemical attack at room temperature. Dimensionally stable. High strength.



## • ACE PARIAN

Slightly better resistance at room temperature to moisture and chemicals (except acetic acid) than Saran. High impact strength. Odorless, tasteless, non-toxic, good for handling foods. At left: Parian diaphragm valve.



## • ACE-HIDE

New resin-rubber blend combines unusually high impact strength and toughness with light weight and good chemical resistance. Available in molded parts. At left is standard 3-gal. Ace-Hide acid pail.



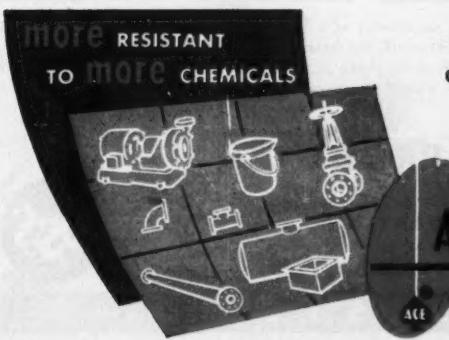
## • ACE-TEX

Low cost pyrobituminous molding compound has excellent resistance to strong alkalies, calcium chloride, hypo, sulphuric acid to 1.30, etc., but poor resistance to organic solvents and oils. Good for small tanks, etc.



## • TEMPRON

New heat-resistant Buna-N compound handles many corrosives to 200° F. and above. At room temperature has better resistance to organic chemicals than natural rubber or plastics. Pipe, fittings, fabricated parts, etc.



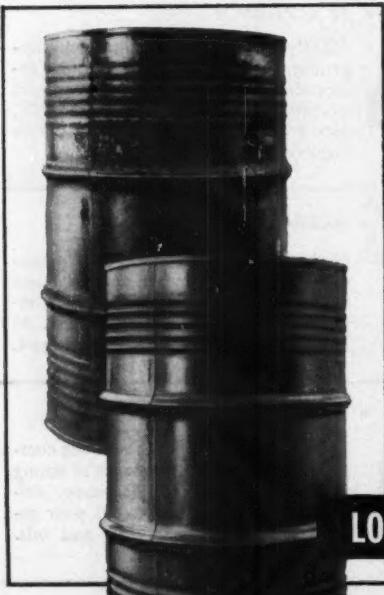
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With literally hundreds of rubber and plastic compounds to choose from, we can usually supply the one best, most economical material for any corrosion problem. Pumps, tanks, piping, valves, utensils, and special molded or fabricated parts. Ask for our recommendations.

# **STOP Product Contamination from unprotected shipping containers!**

**Use U-S-S DRUMS . . . protected by a special  
new cleaning and finishing process**



The drum at left is an ordinary painted drum. After exposure to weather for one year it is badly rusted; in fact rust was very apparent after only one week. The drum at right is a U-S-S Drum. It, too, has been exposed to weather for a year . . . yet there is absolutely no rust on this drum!

*"It's Better to Ship in Steel"*

• U-S-S Drums are processed by a cleaning and treating method which not only removes all forms of scale, dirt, grease and rust, but also retards rust and corrosion. As a result you get drums that can more effectively withstand severe handling and weathering. Your products remain pure and uncontaminated by scale and other residues. This is better for you . . . and better for your customers.

For further information on U-S-S Drums and this new process that puts a stop to product contamination write for our free brochure "U-S-S Drums—100% Scale-free and Rust-inhibited."

## **LOOK AT THE DIFFERENCE PROTECTION MAKES!**



The handkerchief test proves the superiority of a U-S-S Drum. When the interior of an ordinary drum is wiped with a handkerchief, the handkerchief will pick up grease, dirt, scale and rust, as shown in photo at left. But the photo at right shows the cleanliness of the U-S-S Drum . . . the handkerchief remains absolutely clean!

## **UNITED STATES STEEL PRODUCTS DIVISION**

**UNITED STATES STEEL CORPORATION**

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**UNITED STATES STEEL**

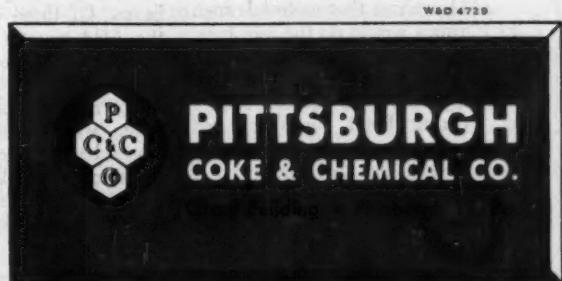
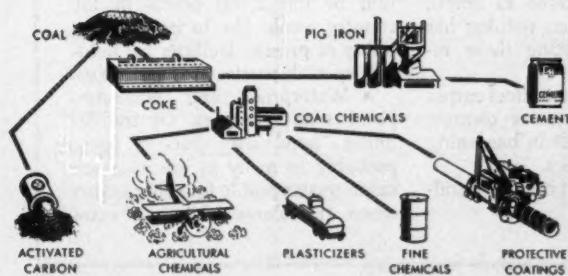


You can measure integration in YARDS  
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**Y**ARDS . . . steps . . . or a stone's throw. Measure it as you will. The operation of Pittsburgh Coke & Chemical's Neville Island plant adds up to one of the most highly integrated manufacturing plants in the world today.

Within a few hundred yards . . . within a few dozen hours . . . this plant transforms small mountains of coal into insecticides, dyes, pig iron, cement and a score of other coal-derived or coal-related products that serve American industry and agriculture.

Is integration so highly developed as this *really* important? We think it is . . . and so do Pittsburgh Coke & Chemical customers. Because it enables us to keep an engineering finger on quality at *every* step of production, and to provide our customers with a reliable continuity of supplies that can stem only from an operation that's genuinely basic. *Aren't those the assurances you want, too?*



# target

Running a hotel is like having your in-laws for a visit. You must make your guests feel at home, yet you must protect your domicile's peace and stability from the inevitable ravages of the invasion.

With in-laws it isn't too hard—especially if the visit isn't too long. You just deep-freeze all your opinions for the duration.

But hotel guests are a different proposition. They alone pick the time and length of their stay. There are more of them. And you can't put the objects of their attack—your premises and its furnishings—out of reach. Besides, they pay for the privilege of sharing your quarters.

That's why hotel operators are always on the lookout for products that will enable them to fare better in each year's encounter with their guests. Hotels are not yet guest-proof, or even completely restorable from guest wear—either normal or excessive. And in the search by hotel managers for products that will make their facilities more secure, chemical makers have a continuing challenge and profitable outlet.

**Constant Revision:** Though some of their problems are always being solved, hotel proprietors, like all business men, find new ones cropping up. A few tough nuts, moreover, seem to defy all efforts to crack them. Among those which the American Hotel Assn.\* puts at the head of its current list of products its members would like to be able to buy are these:

- Plastic coating or finish for furniture that will be alcohol-resistant and burn- (i.e., cigarette-) proof. This tops the "most wanted" list, because a big hotel spends \$10,000-15,000 each year for glass tops for furniture. Though heat-resistant plate is used, there's still plenty of breakage. And water can, and often does, get under the glass to damage the wood finish.

AHA realizes that materials such as Formica would do the job. It is, in many cases, cheaper per sq. ft. than glass. The tasks of cutting such a plastic to fit the odd shapes of existing hotel furniture, and cementing it properly, however, seem to rule out such products. A

\* AHA, which has its headquarters in New York, N.Y., has as members most major chains and hotels.

## Guest-Proof Hotels

clear plastic that can meet the tough use requirements, and is easy—also inexpensive—to apply, would be the answer.

The reward for the company producing such a material would be handsome—how handsome is difficult to say precisely. But members of the AHA boast some two and one-half million rooms. And conservatively, each room averages

- Plastic dishware that looks, feels, sounds and washes like chinaware. Most hotels today will use available plasticsware only in coffee shops, figuring that there they can get away with a noisy eating place. It isn't that plastic dishes—desirable because they are less expensive and nonbreakable in comparison with china—make more noise than traditional ware; it's just that the sound



LOBBYING FOR HELP: Hotel owners want to keep the new look.

three pieces—desk, bureau and table—that currently have to be refinished three or four times each year. In addition to these rooms, public space—lobby, cocktail rooms, etc.—boost the number of damage-prone pieces at least another 20%. All that area will soak up a lot of finish worth a lot of money in labor savings if it does the job.

- Carpet spray to prevent carpet burns. Of those offered to hotels, the AHA reports that nothing has come close to meeting these requirements:

1. Product must not affect carpet—i.e., won't cause color change, loosen backing, result in hardening or drying out of fibers.

2. Product can't promote resoilng (can't be tacky).

is different from what the ear is accustomed to.

- Light partitions to break up rooms. These would probably be of some kind of plastic too. Requirements: light enough to be easily portable and soundproof.

Screens are currently used to divide large rooms and to block off service areas, but they don't do an efficient job. A substantial proportion of the 2,700 hotels in the country would like to increase the utility of present facilities for holding special parties and meetings.

- Waterproof and nonwaterproof soap wrappers. Of the familiar "hotel size" bars of soap, probably as many as are used are made unacceptable for other guests when the shower hits the extra

DOW

# NEW PAPER CARPET BACKING SAFE FROM MOLD ATTACK



*Positive mold control by DOWICIDE PRESERVATIVES  
makes a new idea practical for carpet manufacturers*

The Dow Chemical Company  
Dept. DP 3-26  
Midland, Michigan

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When your product involves paper, paint or textiles you need DOWICIDE® PRESERVATIVES to combat the inherent problems of mold and bacteria growth. As an example, manufacturers of fine carpeting found that twisted paper twine made a durable backing when protected against mildew attack. This protection was easily and positively provided by treating the paper with a DOWICIDE PRESERVATIVE.

Dow produces fourteen different DOWICIDE PRESERVATIVES to aid you in preventing damaging attacks during the three vital phases in the life of your product—during manufacture, through distribution and into consumer use. Write today for more detailed information. THE DOW CHEMICAL COMPANY, Midland, Michigan.

*you can depend on DOW CHEMICALS*



# CHEMICALS AND INTERMEDIATES TO MEET YOUR REQUIREMENTS

## p-Nitrobenzoic acid Technical M.W. 167.1

### DESCRIPTIVE INFORMATION

A light yellow crystalline solid, p-Nitrobenzoic acid Technical is soluble in aqueous caustic and slightly soluble in water. It may contain, as impurities, up to 0.5% p-Nitrotoluene, 0.5% ash, and 0.5% mineral acidity as sulfuric acid. Melting point is unreliable due to decomposition. p-Nitrobenzoic acid Technical is available in commercial quantities.



### SPECIFICATIONS

p-Nitrobenzoic acid Technical is produced to these specifications: Purity . . . 98.0% minimum.  
Moisture Content . . . 0.25% maximum.

### SUGGESTED USES

You may find that p-Nitrobenzoic acid Technical is just what you need in the synthesis of antibiotics and other pharmaceuticals—or as an intermediate in the production of rubber chemicals and dyes. Derivatives of p-Nitrobenzoic acid Technical may be useful as pesticides.

### DO YOU NEED A SPECIFIC INTERMEDIATE?

A WIDE VARIETY of chemical intermediates is now available from the Du Pont Organic Chemicals Department. It will pay you to investigate these products for your manufacturing processes.

A NEW INTERMEDIATE? We have the facilities to produce specific intermediates . . . perhaps one that will meet your exact requirements. Our technical men will be glad to study your problems and work with you in product development.

A REQUEST on your company letterhead will bring complete information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Chemicals Division, Wilmington 98, Del.



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

**ORGANIC**  
**CHEMICALS DEPARTMENT**

### TARGET . . . . .

pieces that must be left in the bathroom. A wrapper that could take this inevitable spray and still look good would reduce this loss.

On the other hand, hotels—particularly those in resort areas—that don't have municipal sewage systems would welcome a wrapper of soluble paper—one that bacteria in the septic tank would break down. That's because the problem of wrappers—most of which are flushed away—overloading the septic system is greater to them than the loss from shower-struck soap.

- Good self-polishing furniture cleaner. The AHA avers that of the polishes on the market, the only ones that give a lasting finish are can waxes, but they are slow to apply. Though emulsion types are easy to use, the gloss dries in one-half to three hours. And the silicone types that show up well on performance present a flammability problem; those in the lower (75-90F) flash-point range don't hold the gloss long enough.

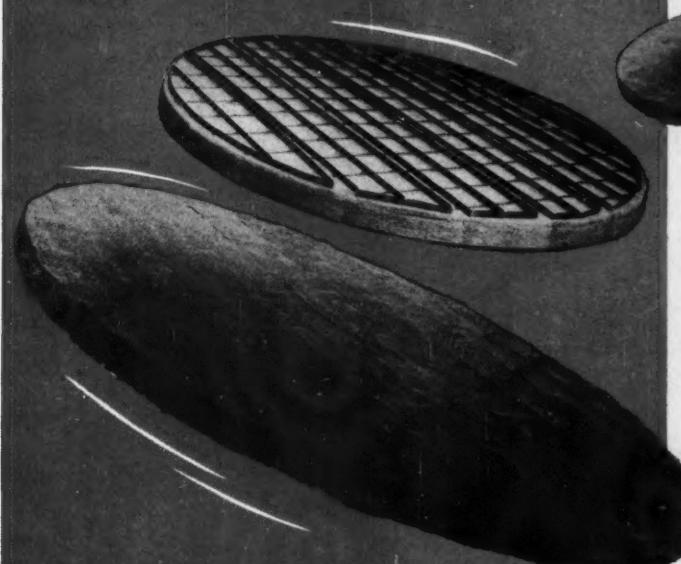
The desired product will hold gloss for a relatively long time, won't show fingerprints, and will stay out of the flammable (105F) category (so it can be kept in the housekeeper's room, does not have to be stored in the hotel engineer's locker). It will be foolproof to use, go on fast. With an average hotel's consumption of probably two cases of pints or quarts a month (at anywhere from 70-80¢/pt. to \$2.25/qt.), such a product should be worth working toward.

- Coating for cork flooring. Hotelmen like the attractive appearance of cork floors, but they are still looking for a clear finish that will resist burns (cigarettes again).

- Plaster. It would seem that no one would have trouble finding such an age-old material as plaster to suit him. But the AHA reports that standard plaster cracks too much, raises maintenance costs. Hotels list these as the characteristics of the ideal material: easy to mix and use, available in various colors, non-cracking, mold-resistant, detergent-resistant, heat-resistant, fireproof and waterproof.

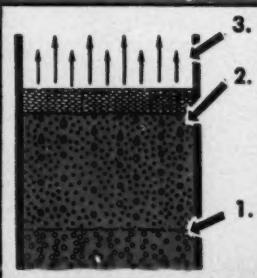
Eager to Test: The AHA, through York Research Corp. (Stamford, Conn.) will test any potential chemical answers. Reports on suitable products go to all member hotels, and particularly hot items are shown at state and national AHA meetings. With its merits shouted from hotel tops, a "target" item should have heroic sales.

**Get Improved Performance  
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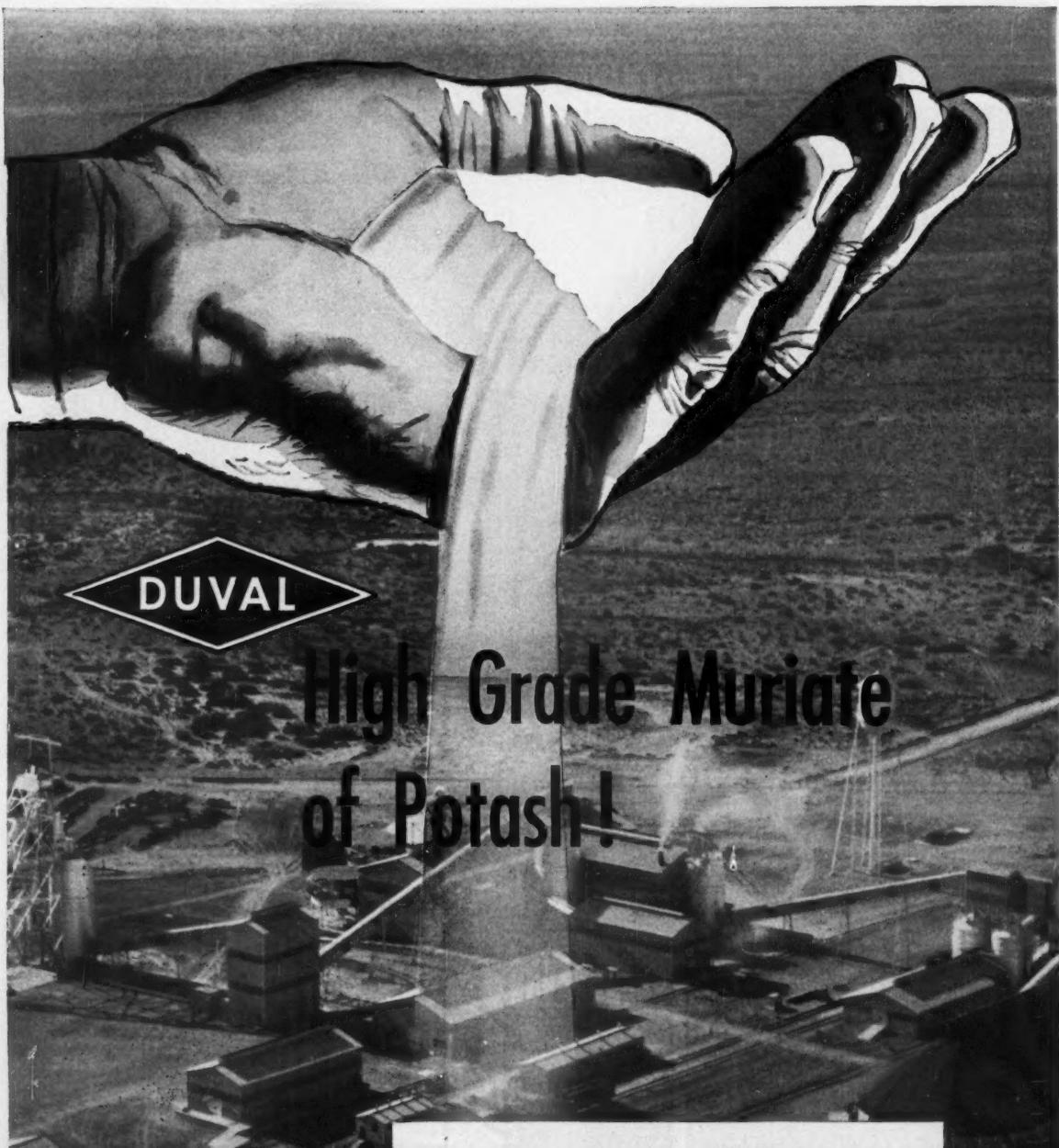
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# RESEARCH . . .

## Outracing the Treadmill

Here's one company's timely answer to the problem of keeping its researchers abreast of fast-moving developments in their scientific fields of specialization.

In the good old days a research chemist or engineer might look forward to a periodic session with his scientific journal. Today, he's probably overwhelmed by the mountain of published scientific data in his field. Striving to keep pace with the literature, for the average researcher, is like trying to outrun a treadmill; it's exhausting and it never really gets him anywhere.

Even the abstractors have been left behind by the burgeoning growth of scientific and technological publishing. Ten years ago less than a third of the nearly two million annual scientific articles were even partially covered by the 300 existing abstracting and indexing journals—and the situation has grown steadily worse. There are now at least 20% more periodicals, many of which are completely ignored by the established abstracting services.

To add insult to injury, indexing and classification systems vary all over the map. A thorough search of the literature on just one specific compound takes infinite patience, a terrier's tenacity and a detailed multilingual knowledge of the vagaries of

several hundred abstracting systems. On top of everything, the lag between publication of a paper and the appearance of an abstract varies from two months to several years. And indexes take even longer.

Face to face with these towering obstacles to creative cross-fertilization, progressive research directors this week are asking: "What can be done?" One welcome answer comes from Harrison, N.J., where Alice Rankin, enterprising Nopco Chemical Co. librarian, is successfully coping with her firm's technical information problem. Her solution: a novel company abstract bulletin.

**Fast Work: Speed** is the chief attribute of Nopco's system. The abstract bulletin is not meant to replace conventional sources of scientific information; instead it supplements them, beefs up their weak spots. "A library staff," explains librarian Rankin, "cannot expect to cover all of the literature, even in the fields served by its company."

"But," she emphasizes, "a good abstract bulletin can bring pertinent data to the attention of researchers much faster than any of the com-



NOPCO'S RANKIN: Her literature abstracting arithmetic . . .



. . . adds up to a measure of relief for harried researchers.

mercial services. And by providing an up-to-date index, it performs a service which is at least as valuable, if not more so, than the timely appearance of the abstracts themselves."

The abstract bulletin idea won't be an eyebrow-raiser at this date. It has been thought of before, and, in several cases, put to use. Cost, usually, stands behind most rejections. Financial loss, however, need not be the price of speed and convenience. An abstract bulletin like this, avers Rankin, pays for itself in saved time and motion. And she does a pretty good job of making her case.

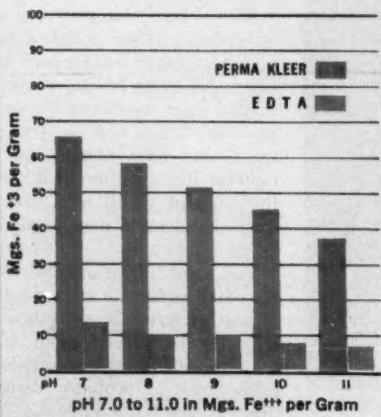
You have to bear in mind, she points out, that under the prevailing method of routing scientific periodicals a man may regularly scan from 10 to 50 journals, searching for articles in his field. Since he probably doesn't have time to read the ones he finds, he

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## RESEARCH . . .

either sends for reprints or asks the library to do so.

"Assume," she says, "that there are 70 technical people in an organization and each spends only an hour a week scanning journals, not getting much further than titles; add to this the clerical time used in circulating these journals and sending for reprints. Then add either the cost of extra copies for circulation or the value of the time spent in locating sole copies when someone needs them."

"The total cost," she ventures, "certainly comes to more than the combined salaries of the one clerical and two professional staffers which are all that are required for the bulletin job."

For literature expert Rankin, this is more than an arithmetical exercise. With an abstracting staff of 3½ (1½ professionals, 2 clerks, figured on a time basis) she publishes a very real (and very economical) monthly bulletin of technical papers and patents.

Here, in her own words, is exactly how it's done.

"Our one abstractor reads about 125 journals and patent journals monthly. After our periodicals are checked into the library, they are put on display racks for one week, then turned over to the abstractor. She checks the table of contents of each journal for articles of interest to Nopco.

"The first page of each such article is marked with a slip of paper on which the subject heading is noted. If the article contains an abstract or author's summary, we use it. If not, an abstract is written on the slip. Generally only the translated titles of foreign articles are used, but we include English summaries when they can be had. Not all abstracts go into the bulletin; for quick differentiation, bulletin abstracts get pink slips, others are tagged with white.

"That way, if typing piles up bulletin abstracts are readily picked out for fast action. We use a hectograph duplicating system. Our clerks type abstracts on ditto masters in the order they follow in the journals with no regard for subject content. The masters are then cut up and each abstract is transferred to an index card. For actual preparation of the bulletin, the masters are arranged under broad subject headings, taped on sheets of paper, and used to run off the required number of copies.

"The industrial chemistry bulletin is sent to about 100 persons, the biochemistry bulletin to about 50. The two average over 200 literature and patent abstracts a month.

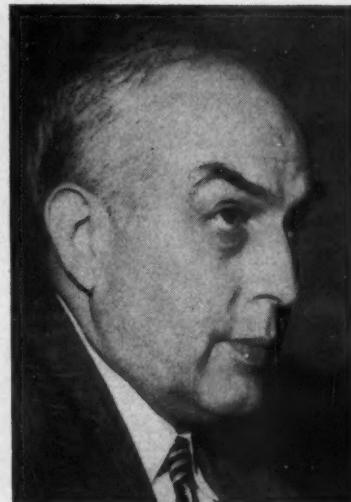
"We find that the way we now put

out the bulletins enables us to publish about a week earlier than we could by mimeographing them. You can see that we don't get a very fancy job. But we're willing to trade frills for speed."

The Nopco system may not be the last word in industrial abstracting schemes, and it's surely not the only one. But just as surely, it's a practical answer to the problem of providing a measure of relief for harried researchers who are just about ready to cry "uncle" in the face of an oppressive scientific literature situation.

### Unity Plan

Trumpeting the cause of unity, research-minded Cary Wagner has cued organic chemicals manufacturers for "a concerted effort in rolling back the frontiers of knowledge . . ." Speaking recently as president of Synthetic



SOCMA'S WAGNER: An answer for latent thunder.

Organic Chemical Manufacturers Assn., Wagner lauded SOCMA members for their past research achievements, proposed a plan for future cooperation in the vital area of fundamental investigations.

Perched on peak research expenditures, the organic chemical industry can take justifiable pride in its record of accomplishment. From a substantial \$14 million in 1939, research outlay has skyrocketed to an astronomical \$200 million. Moreover, research spending has proportionately outstripped sales over the same period. In 1939, the industry was spending about 3½ cents for research out of every sales dollar; last year the figure had grown to a nickel.

But, according to Wagner, much

more could be done—if not in conventional ways, then in new and as yet untried spheres. Wagner's idea: a pool of basic research resources for the common good. How it would work: each firm, whether or not it now supports basic research, would allocate a modest sum for a central research program to be conducted under the auspices of the industry as a whole. Target of the concerted effort, Wagner explains, would be the many problems in basic research that until now have been pushed into the background. Results would be available to all.

Aware of the latent thunder in his bold call to action, the SOCMA president took pains to make his position crystal-clear. His vow: "Applied research . . . is the jugular vein of competition . . . I would never strike at it or impair its vital function." Even so, some synthetic organics men left little doubt that they could easily forego the fruits of union. But almost anticipating a measure of criticism, Wagner prefaced his unexpected proposal with an anticipatory rejoinder: "That reticence [to share], so understandable in the field of applied research, is much less comprehensible in . . . basic research."

### New Route to OMPA

Life has always been beautifully simple for the man who wanted to make pyrophosphoric amides. He made them by the one tried-and-true method, or he didn't make them at all. From now on, however, he'll have to do some head-scratching. Reason: a new synthesis of octamethylpyrophosphoramidate (OMPA), conceived by Dow researcher Henry Tolkmith, paves an alternate route to the insecticidal pyrophosphoric amides and esters.

Polyphorylation and transphorylation are dual keys to the new synthesis.

Here, in principle, is how it works: a diimidophosphoryl chloride, a trimidophosphate and triethyl phosphate are heated for several hours, form ethyl chloride and a pyrophosphamide.

To test the synthesis in the preparation of OMPA, Tolkmith heated three moles of tetramethyldiamidophosphoryl chloride, two moles of hexamethyl phosphoramidate and one mole of triethyl phosphate for 3½ hours at about 160 C. OMPA was separated, in 46.7% yield, by molecular distillation. By upping the charge of hexamethylphosphoramidate to three moles, a 69% yield of OMPA was realized.

That's about 15% better than the

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# DESIGN and PRODUCTION NEWS

FOR CHEMICAL ENGINEERS

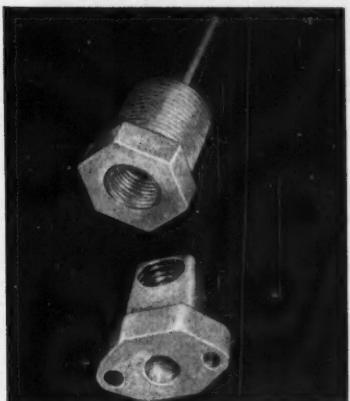
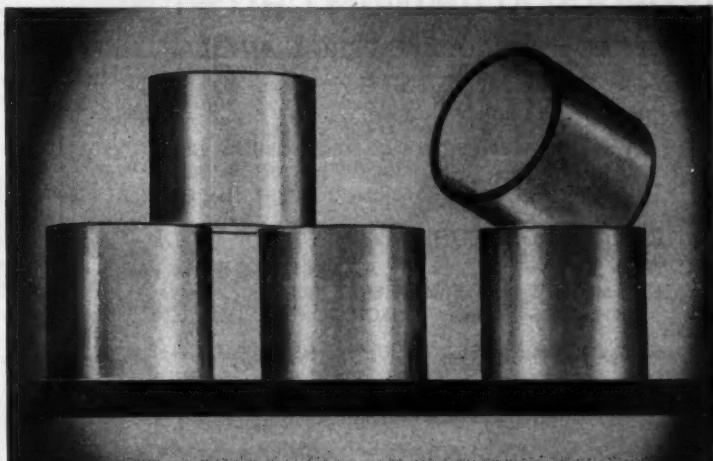
Published by TECHNICAL SERVICE, Chemical Manufacturing Division, The M. W. KELLOGG Company

November 1953

## Analyzer Parts of Kel-F® Permit "Universal" Use for Corrosive Gases

By providing gas sample inlet and outlet connections made of "Kel-F" trifluorochloroethylene polymer plastic, a single infrared analyzer can now be used to handle all process gas analyses.

The unusual chemical inertness of "Kel-F" permits corrosives such as SO<sub>2</sub> and reactive organics such as acetylene and halogenated hydrocarbons, to be sampled continuously and safely at temperatures up to 170°F. In using this inert fluorocarbon, a source of adsorption has been eliminated, thereby speeding up the calibration procedure.



The precision molded plastic fittings remain leak-tight indefinitely, in spite of operational shock and vibration, because of the unusual strength—impact, compressive and flexural—of "Kel-F" over the maximum anticipated temperatures range. The resiliency of the plastic and its remarkable "memory" make pipe-thread connections leak-free without sealing compounds. They can also be readily disconnected without damage.

The Leeds & Northrup Company, Philadelphia, Pa., manufacturer of precision instruments and automatic controls, injection-molds two types of gas sample fittings from "Kel-F", illustrated above: One for a standard, non-hazardous installation (lower), another for their "explosion-proof" analyzers (upper). The excellent moldability of "Kel-F" polymer made it possible to obtain the precision threads, bores and mounting holes required for both types of analyzer fittings, using standard injection molding equipment.

**Refer to Report C-112**

## Non-Spalling Raschig Rings of Kel-F Unaffected by Corrosive Radiation Products Up to 350°F... Reduce Tower Jamming... Boost Process Efficiency

Resistance to breakage or distortion under thermal cycling, inertness to highly-corrosive chemicals and radioactivity, are features of these Raschig rings designed for atomic energy studies. "Kel-F" trifluorochloroethylene polymer plastic was found to be the one chemically-inert substance tough enough to stand up under such severe operating conditions.

The fluorocarbon plastic tower packing remains unaffected even after continued exposure to corrosives such as hydrogen peroxide, hydrofluoric and fuming nitric

acids and aqua regia at low and elevated temperatures.

The high strength—impact, compressive and flexural—of "Kel-F" over a wide temperature range (minus 320 to 390°F) prevents the rings from cracking or crushing at low temperatures and from spalling or distorting at high temperatures. The plastic's low thermal expansion permits accurate, compact tower packing without damage to tower or packing.

Preliminary studies indicate that "Kel-F" trifluorochloroethylene polymer retains its unique combination of properties after exposure to many levels of nuclear radiation.

The 1½" diameter Raschig rings illustrated are one type produced by W. S. Shamban & Company, custom molders of Culver City, California. Injection-molded of "Kel-F" in multi-cavity molds on standard equipment, the packing needs no finishing prior to use. The Shamban Company also designs and molds other products of "Kel-F" for chemical and electrical applications. Among these may be included: gaskets, seals and "O" rings; rod, tube and sheet; and many types of electronic components.

**Refer to Report C-111**

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Min. 98.5% powder      IRON CONTENT: Max. 0.01%

## 2. TECHNICAL GRADE (SUBLIMED):

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## RESEARCH . . . . .

yields obtainable from the old method — reaction of an amido chlorophosphate with an amido phosphoric acid. Substituting ethyl phosphate for the amidophosphoric acid is a yield-boosting innovation, but a dubious improvement in the light of the extra preparation it requires.

Sparked by a critical look at some transphosphorylations, the new method is cut in the pattern of the familiar synthesis of tetraethyl pyrophosphate (TEPP) by reaction of diethoxyphosphoryl chloride and triethyl phosphate. But it's more than a mere extension of a well-worn procedure; the method's long-range importance will be measured by its success in triggering a new round of organophosphorus insecticide developments.

On the other hand, if OMPA catches on here as it has abroad, the new synthesis could pay handsome production dividends.

**Tenfold Debut:** The prolific family of Eastman organic chemicals is bolstered by ten brand-new additions. Included in the new group are *m*-toloxyacetic acid, a reagent for separating thorium from rare earths and uranium; and N,N'-diethylsulfanilamide, a colorimetric reagent for thyroxine. The remaining ones: *p*-amino-*a*-chloroacetophenone; 4-aminoantipyrine; bicyclohexyl; butyrolactone; 2,4-dihydroxybenzophenone; *p*-nitrophenoxycetic acid; sebaconitrile. All are available from Distillation Products Industries (Rochester, N.Y.).

**Getting Up Pressure:** Northwestern University's (Evanston, Ill.) new superpressure research unit was officially unveiled last week. Part of the university's Ipatieff catalytic and high-pressure laboratories, the new unit will be used for research on the application of superpressures to catalytic reactions of organic compounds. It required five years to design and build.

**Lamb Fattener:** Livestock researchers of Iowa State College report the first positive result in their tests of diethyl stilbestrol as a lamb-fattener. So far, stilbestrol has found commercial use only in poultry raising.

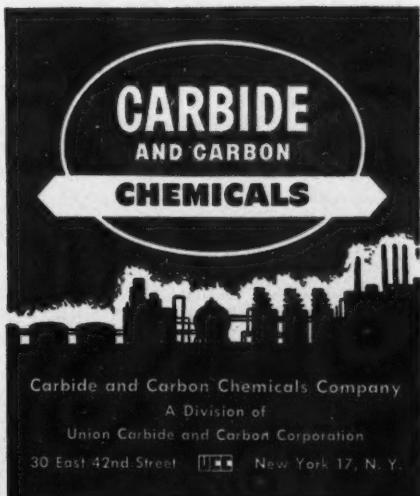
**Help Wanted:** A prominent educator makes it clear that atomic energy research is an expensive proposition. So expensive, in his opinion, that universities "need unrestricted contributions from business corporations if they are to continue their fundamental scientific research in atomic energy . . ." That's the timely message of William



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## META-PHENOLS 220

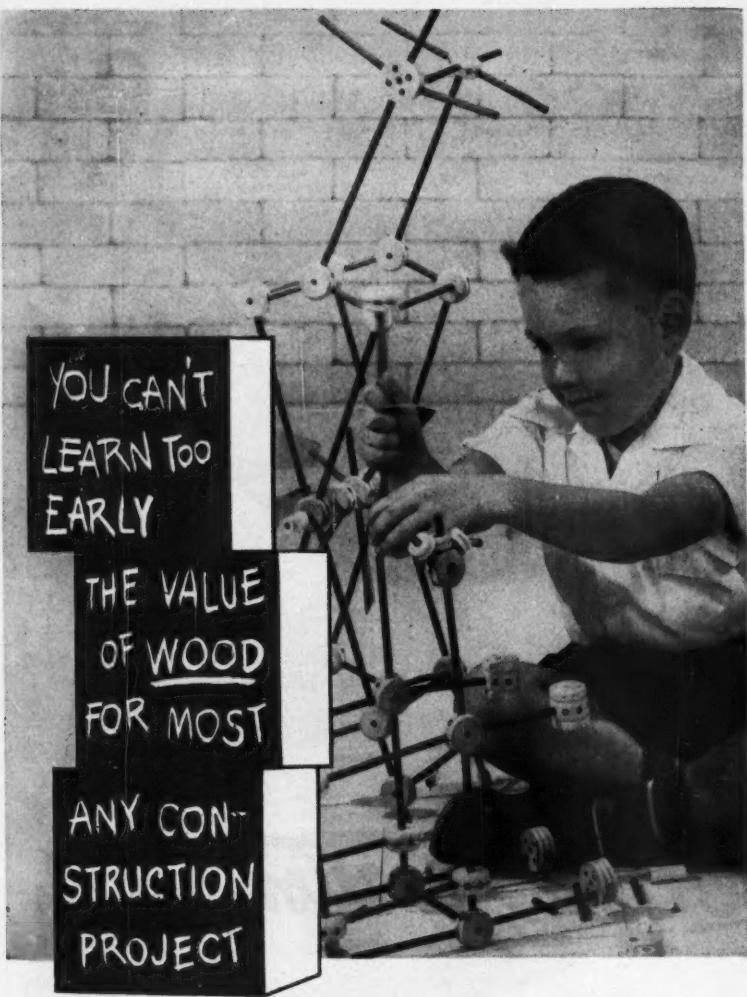
Boiling range 207-230°C. A mixture of cresols, xylenols, and ethyl phenols—2.2 *ortho* and *para* positions per molecule are open. Phenol and 2,6-xylenol are absent. Phenolic content—about 98%.

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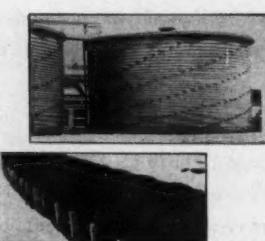
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## RESEARCH . . . . .

Watson, chairman of Yale University's physics department. Underscoring the high purchase and operating cost of intricate atomic equipment, Watson laments: "You are just not in the running these days in atomic research if you do not have these large pieces of equipment." Most university research in atomic fields is now supported by the government or by the schools themselves.

**Aid for the Aged:** In step with the trend, Wm. S. Merrell Co. (Cincinnati) is readying its brand-new gerontological research laboratory. To house probes of drugs for the aged, the lab is the newest link in a \$2-million expansion program.

**Wisconsin Newsmakers:** Madison, Wis., was the scene of a pair of last week's newsmakers:

- Ground was broken for new Wisconsin Alumni Research Foundation laboratories. When completed, the facilities will accommodate WARF's sponsored programs of insecticide screening, vitamin assaying and toxicity testing.

- University of Wisconsin researchers reported the discovery of oligomycin, a new antibiotic. The newcomer possesses a selective spectrum, attacks fungi but not bacteria. Moreover, it's stable over a broad range of temperature and pH. Possibility: a promising future in countering agricultural fungus diseases. But that's still just a fond hope. Much additional research lies ahead.



**Disposal for Sale:** Radioactive research laboratories have a new and willing friend in Atomic Energy Waste Disposal Service. The Oakland, Calif., firm will take over processing and disposal of radioactive discards on a contract or purchase basis. Contaminated liquids, solids, slurries, equipment and dead laboratory animals all come within the scope of the new service. And the company will accept waste shipments from all parts of the country. Cost will be based on the amount of material to be disposed of.

**Ag Push:** A biological research section has been organized by Spencer Chemical Co. (Kansas City, Mo.) to implement the company's newly launched long-range agricultural chemicals development program. The new group is headed by researcher Otto Hoffman, will take over a laboratory and greenhouse now under construction at Spencer's Jayhawk works, Pittsburg, Kan.

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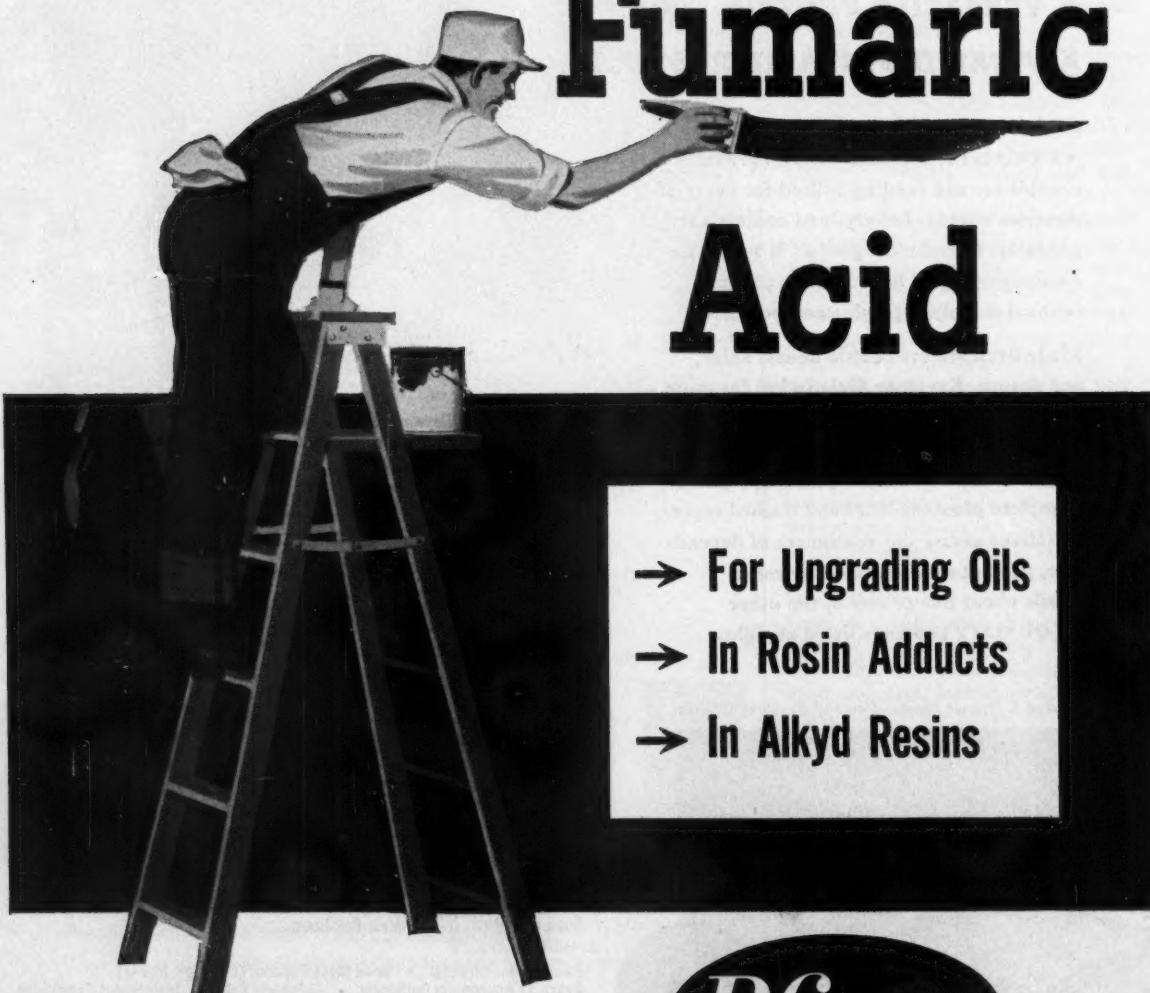
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Once restricted to pharmaceutical use, unit packaging is now expanding into industrial chemical sampling and retail marketing, promises a boon to chemical producers who supply packaging film materials.

Standout advantages of unit packaging: maximum point-of-sales appeal, maximum product protection.

With sales competition tightening, today's alert sales manager is watching over the entire merchandising field for aids in getting his goods before prospective buyers' eyes. One recent development to boost products is unit packaging—picked up from an allied field. Used for over three decades by pharmaceutical firms for sending new products to physicians, unit packaging is now being assigned more mundane roles. Here are some of them.

Early this fall Mallinckrodt had a half-dozen of its fine chemicals packaged for sampling in small, "two-in-one" polyethylene bags (right). As part of its promotion program, the bags were distributed by mail as well as by Mallinckrodt salesmen.

Though the number distributed was not large—around 4,000—the company reports that it's pleased with the project, has received some "fine comments from the trade."

**Samples in Hand:** Another case in point is Solvay. For over two years now, it has been sending samples of calcium chloride in 1-lb. polyethylene bags to jobbers, wholesalers, retailers and salesmen. The same is done with three of its detergents; 4 oz. and 1 lb. packages are sent in batches of 4-5,000 to dairy companies, which in turn pass them on to farmers.

Today Solvay is considering a plan to extend this type of sampling to its "entire line"—exception, flake products. As company officials see it, such sampling is a jazzed-up version of the old idea of letting the customer see what he is buying.

In retail selling, too, unit packaging is making itself known. Recently (CW, Sept. 19) Monsanto adopted a laminated film-to-foil combination for its 2 oz. packages of Krilium Soil Conditioner (right). Since Monsanto is new in the retail field, its endorsement of this type of package is noteworthy.

The firm says its handy-size package is designed for use in preparing soil for potting and transplanting, adds that the choice of the film-foil combination was "to provide maxi-

mum point-of-sale appeal and maximum product protection."

These two statements pretty well sum up the top advantages of unit packages. They're generally not large but are made in unit-of-use sizes. Moreover, because of the materials used and owing to the manufacturing techniques employed, they offer product protection previously found only in glass jars and in cans.

**New Era:** Until World War II, unit packaging did not spread much beyond the drug trade. During the '20s and '30s, large pharmaceutical houses would send their pills, capsules, tablets to be packaged by one firm, the Ivers-Lee Co. of Newark, N.J. These sample products would then go out to hospitals, physicians, drugstores.

But the picture changed with the end of the war. Other firms became interested in unit packaging. Then Ivers-Lee's basic patents ran out. The result: at the present time there are at least 20 concerns in the field and they gross around \$15 million/year.

This change hasn't unhorsted Ivers-Lee, however. It is still the biggest money-maker, getting over half the business. It has three plants, all in Newark, and on a normal day packages some 10 million units.

It does business in two ways: contract packaging for manufacturers, and renting its packaging machines.

The second largest in the business, McKay-Davis (Toledo), operates in a similar manner but it also sells machines, priced from \$5,000 to \$11,000. Other machine manufacturers are Transparent-Wrap Machine Corp., Hasbrouck Heights, N.J.; Stokes and Smith Co., Philadelphia, Pa.; Triangle Machinery Co., Chicago, Ill.; De Florez Co. Inc., New York, N.Y., and Wrap-Ade Machine Co. Inc., Belleville, N.Y.

This means that companies once dependent on Ivers-Lee can now do their own packaging. Also, whereas Ivers-Lee tends to think of jobs in terms of millions, newcomers in contract packaging are content to talk in terms of thousands.

Hence, the concern that has been



FOR HOME USE: Monsanto's film-to-foil combination.



FOR INDUSTRIAL SELLING: Mallinckrodt's "two-in-one" sample.



EXPERIMENTAL: Du Pont's package designed for soapers.

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## DISTRIBUTION . . .

doing unit-packaging for Solvay, for example, says it can make a profit on quantities as low as 2,000. There's a scramble today for jobs of all sizes.

**Other Factors:** But it's not only the increase in packaging machine manufacturers and companies doing contract packaging that has caused a tremendous upswing in the business. The public has taken to unit packaging to such an extent that things as diverse as maple syrup and ball bearings are now being merchandised in them.

Yet this could not have happened without the development of new machines, new materials, new techniques.

Formerly, machines did not package more than 50-60 units/minute. Now it's up to 150-200 units/minute. And where the packaging is done on a strip basis, the rate sometimes rises to 600 units/minute. All of which has made the operation more economical.

As for the materials, in the past the old stand-by was cellophane. Now there's vinyl, polyethylene, Pliofilm, Saran, acetate, aluminum foil, glassine, and many combinations of these. What these materials offer: stability, moisture resistance, seal-strength, visibility.

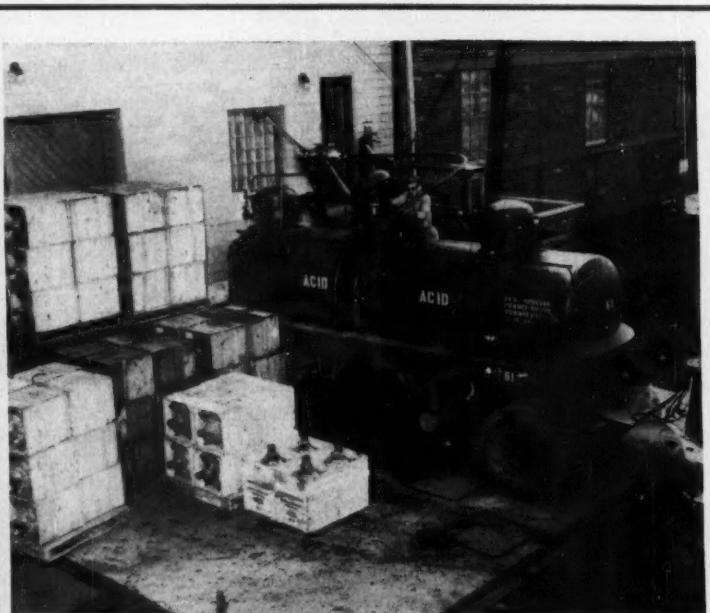
With the chemical industry so in-

volved, it is not surprising that makers of these materials show an eagerness to help iron out package problems. Du Pont goes so far as to have its packaging development group actually design packages for its film customers (p. 53).

Thanks to improved techniques, the applicability of unit packaging has been greatly widened. Whereas 10 and 15 years ago unit packages were confined mainly to pills and powders, now they hold much larger amounts and are used for packaging creams and liquids. For example, not long ago a producer of paint pigments started shipping the pigments in heavy pouches of laminated cellophane and polyethylene. His conclusion: leakage was less than when collapsible metal tubes were employed.

**The Future:** How big an impact unit packaging will have is a matter of speculation. One authority predicts that many single-use liquids and semi-liquids now in conventional containers will one day be put up in laminated flexible packages at just one-half to one-third the present cost.

Lloyd Volckening, president of Ivers-Lee, thinks that unit packaging will not, of course, replace bulk packaging. "But," says he, "for sampling,



### Carboy on Wheels

BUILT to Du Pont specifications, this new tank wagon is now seeing service at Grasselli, N.J. Its three glass-lined tanks hold 1,500 gal.—more than the stacks of carboys

piled at left—and deliver C.P. reagent-grade acids. Advantage: bulk delivery users are expected to save considerable sums on handling and shipping costs.

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## DISTRIBUTION . . . . .

education, introducing a product, the flexible unit package is the one."

Regardless of the course unit packaging takes, it is bound to receive increasing attention as:

- A marketing tool for industrial chemical sales.
- A point-of-purchase package for retail-minded chemical producers.

And, of course, both routes of expansion will benefit the packaging materials makers.

### On the Scene

Another example of the increasing tempo of competition in distribution has just been unveiled. Shell Chemical Corp. has now established an alcohol denaturing plant at Argo, Ill. Operated for Shell by Great Lakes Solvents, the new facilities are expected to substantially reduce the time required by the company to service orders from midwest points.

This move of Shell's comes at a most opportune time. On at least two counts, alcohol has been a subject of interest recently.

- Only two weeks ago (CW, Nov. 21) the National Petro-Chemicals plant at Tuscola, Ill., went onstream.

- A few days later, tank car prices for industrial alcohol were slashed 5¢/gal. by major producers.

Actions like these add up to the same conclusions:

- Customer service in alcohol sales, as in many other fields, will play an increasingly important part in the coming competitive period.

- Savings in distribution costs will receive more attention from now on.

In adding the alcohol facilities at Argo, Shell in effect strengthened its relationship with an important de-

mand sector of the country. Shell's customers supplied from Argo include an area of most of Illinois, Indiana, Wisconsin and Michigan, and parts of Ohio and Minnesota. In this region approximately 25% of all this country's alcohol is consumed.

Three results of the new Shell setup:

- Reduced delivery time from one to two weeks to perhaps a matter of a day or two.
- Set up a complete line of specially denatured grades close to the point of use.
- Cut transportation costs.

Previously, Shell deliveries to the Midwest came via two routes:

- Directly by barge out of its Houston plant and up the Mississippi.
- Indirectly, by rail, from the company's denaturing plant at Sewaren, New Jersey.

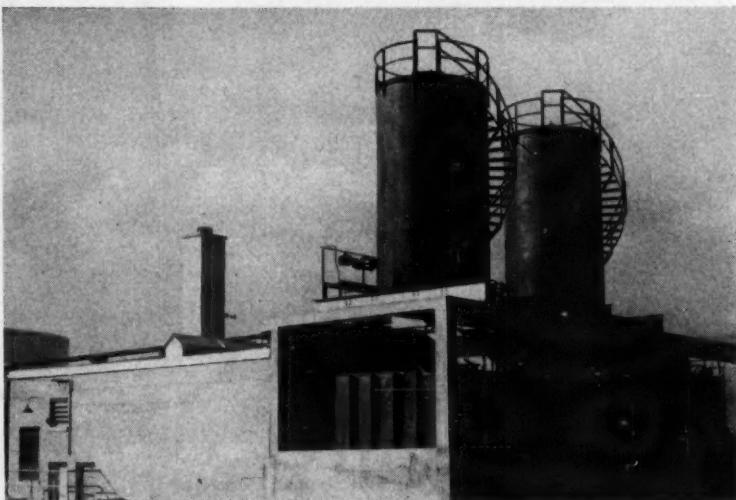
**Road Ahead:** Moves such as Shell's will probably occur with increasing frequency. A generally improved supply position in alcohol is forcing emphasis on customer service.

Specific factors now contributing to this trend include:

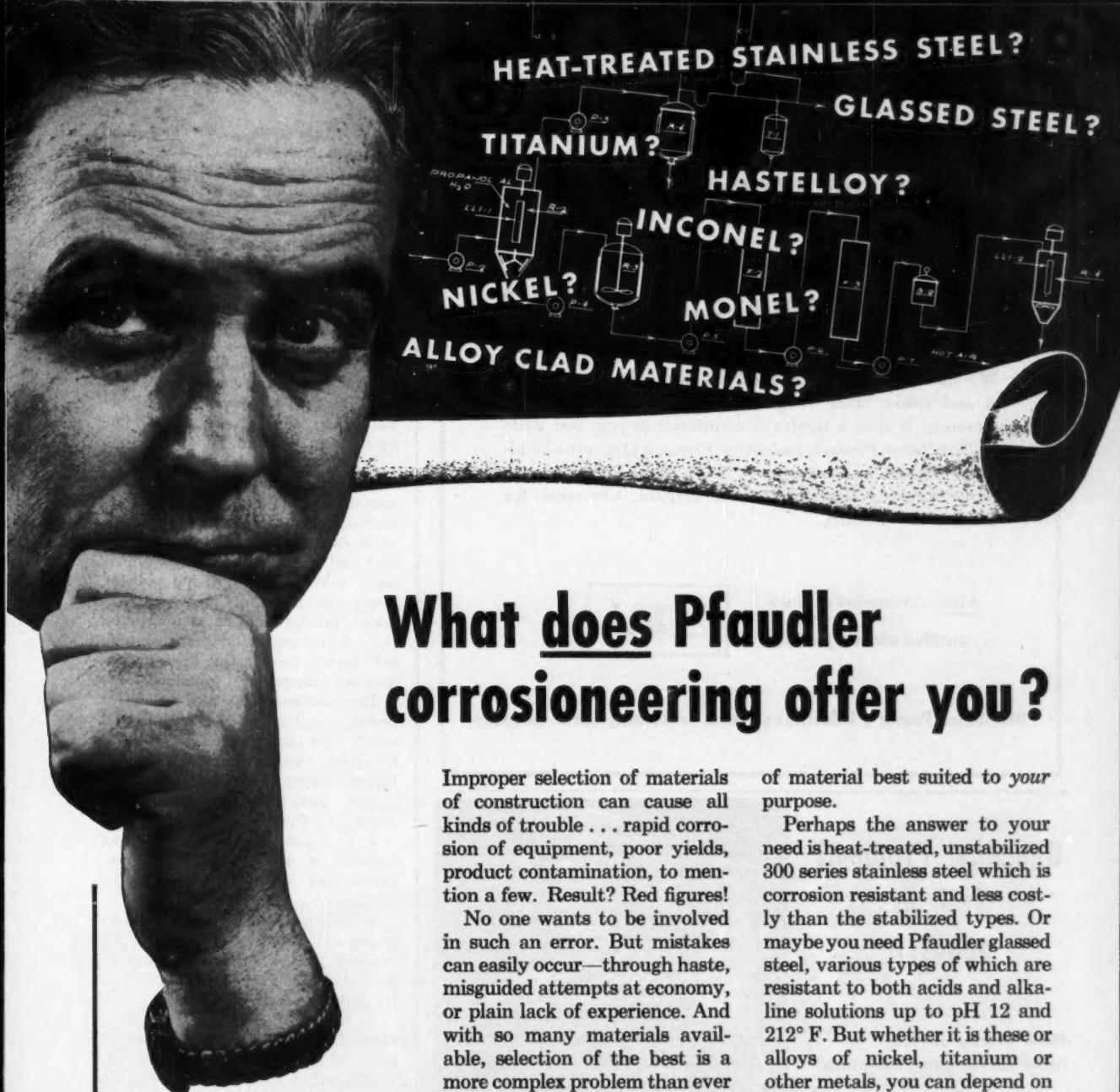
- A slow down of the government synthetic rubber program. A year ago the government estimated its 1953 alcohol needs for making synthetic rubber at 80 million gal.; actual quantities purchased, however, are only about half that amount.

- Step-up in capacity. The giant plant set up by National Petro-Chemicals has a reported capacity of 125,000 gal./day, approximately 25% of U.S. normal total output.

- Increased freight and handling charges have hiked the differentials between small and large lots. Example: carlot price in drums is now up



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While you are at the Chemical Industries Exposition in Philadelphia, stop in at the Pfaudler Booth. There you can see what Pfaudler is doing these days in this field of corrosioneering.

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**DISTRIBUTION . . . .**

to 13¢/gal. (from a previous 12¢) above the tank car price.

Small wonder, then, that in the period ahead, all other factors being equal, the sales race will very likely go to the swiftest and cheapest.

**Sales Seminar**

The mounting problems of sales executives came in for a three-day discussion last week. Under the auspices of the American Management Assn., seminar meetings were held in AMA's New York City quarters. The subject: "Place and Use of Product Managers."

With the general consideration of the meetings directed to over-all responsibilities of the chief sales executive, the spotlight was turned upon such pertinent topics as structure and functions of sales organizations, sales policies, pricing policies, long-range planning, customer relations, training and developing sales staff, improving communication with field forces, coordinating sales promotion and advertising campaigns.

The seminar was carried out as several small-group meetings, one of which was chairmanned by Edward Everhard, vice-president, sales, of Libbey-Owens-Ford Glass Co. Some notable aspects of his sessions, according to Everhard:

- The great diversity throughout industry of authority and responsibilities now assigned to the product manager.

- The pronounced shift in sales emphasis from consideration of the product *per se* to consideration of how the product can be applied to the customer's particular need.

**Monsanto Move:** Monsanto Chemical Co.'s Organic Chemicals Div. has established a district sales office in Atlanta, Ga. It will be managed by Howard A. Lovejoy, Jr., previously with the Phosphate Div.

**Service Division:** Brea Chemicals, Inc., Los Angeles, Calif., has formed a technical service division to supply information on aqua ammonia and other agricultural chemicals. Division head will be R. L. Luckhardt. The company is currently building an ammonia plant near Brea, Orange County, Calif.

**Expansion:** An additional warehouse has just been completed in St. Louis, Mo., for Harry A. Baumstark and Co.

**Hooker Plant:** Beginning Jan. 1, Hooker Electrochemical Co. will ship

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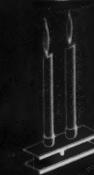
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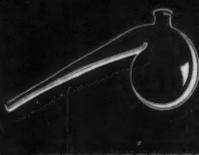
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**Harshaw Additions:** Harshaw Chemical Co. has installed facilities for the manufacture of sodium methylate and sodium methylate (liquid, 25%) at its Gloucester City, N.J., plant. Both catalysts are immediately available.

**Nopeo News:** Nopco Chemical Co. has appointed D. M. MacGregor as Pacific Coast representative for the company's plastics division. Concurrent with the appointment is the opening of an office in Los Angeles to handle Lockfoam plastics. MacGregor will head up both sales and technical liaison.

**Cincinnati Office:** Heyden Chemical Corp. has opened a sales office in Cincinnati, O. Manager will be T. H. Risch, formerly assigned to the firm's Chicago branch office.

**For The Bookshelf:** Among the latest literature offerings:

- Davison Chemical Corp.'s technical bulletin on its new PA400, a refrigeration-grade silica gel.

- Dow Chemical Co.'s 47-page booklet on its new monomer, vinyl-toluene, which is used in paints and varnishes.

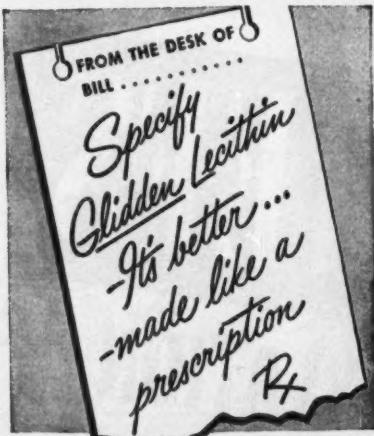
- The 1954 edition of the booklet, "Physical Properties of Synthetic Organic Chemicals," published by Carbide and Carbon Chemicals Co. It gives data on more than 330 products and lists 36 new chemicals.

- Carbide's technical bulletin on Cellosolve acetate, a solvent used in furniture and metal lacquers. The bulletin includes information on resin solubilities and on the acetate's performance in nitrocellulose lacquers.

- Biorganic Laboratories, Inc.'s (East Paterson, N.J.) new catalog for pharmaceutical manufacturers. It contains a list of hormones, fine and organic chemicals as well as data on yields and costs of finished pharmaceuticals.

- The fifth edition of the Central Atlantic States Manufacturers' Directory, published by the T. K. Sander Organization, Baltimore, Md. Price: \$30/copy.

**S. B. Penick:** S. B. Penick & Co. and The New York Quinine and Chemical Works, Inc., clarified the fact that a recently issued combined catalog covers only wholesale package lines. Both companies, they explain, maintain separate sales staffs and separate catalogs in their bulk divisions.



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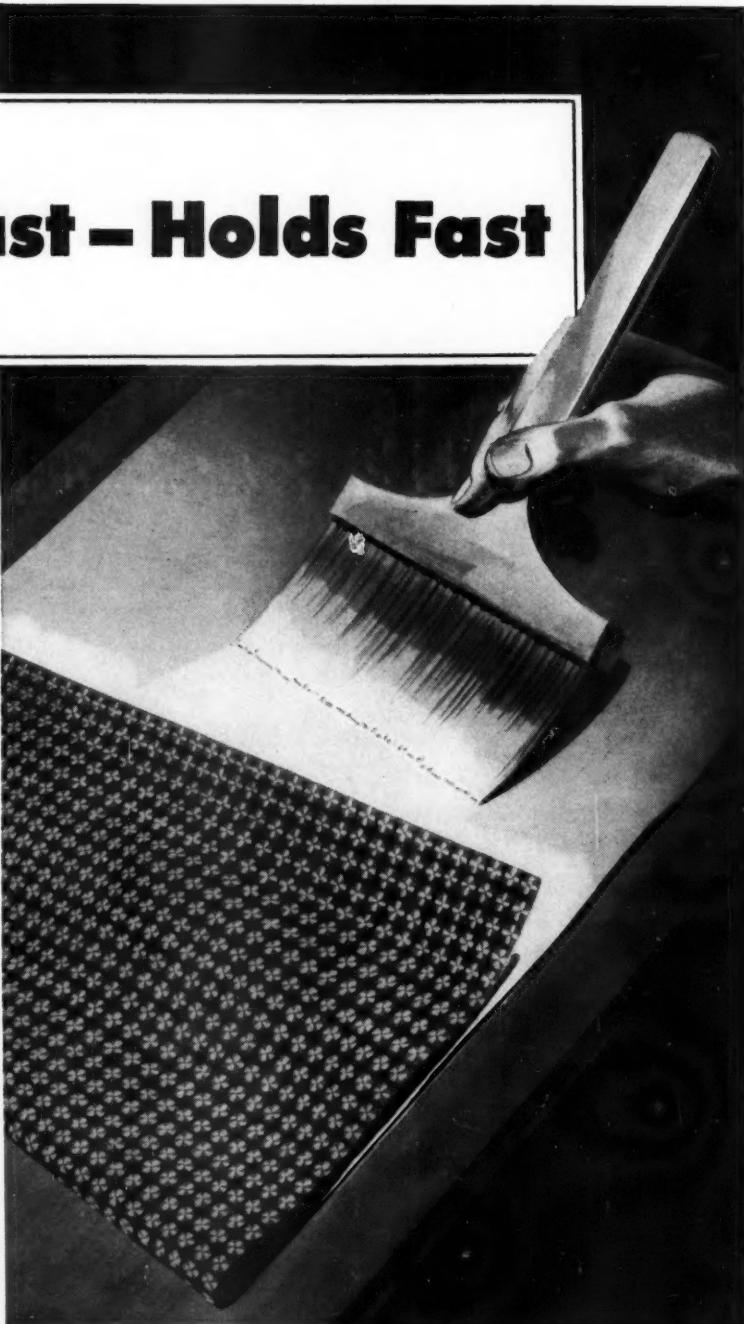
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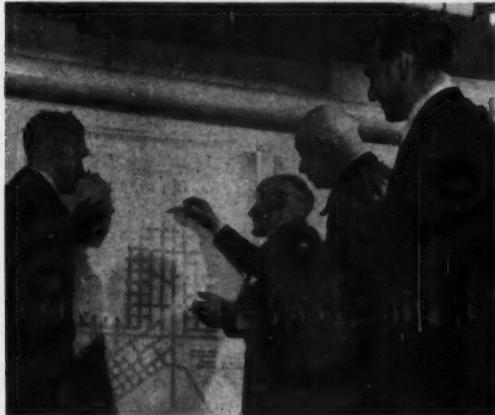
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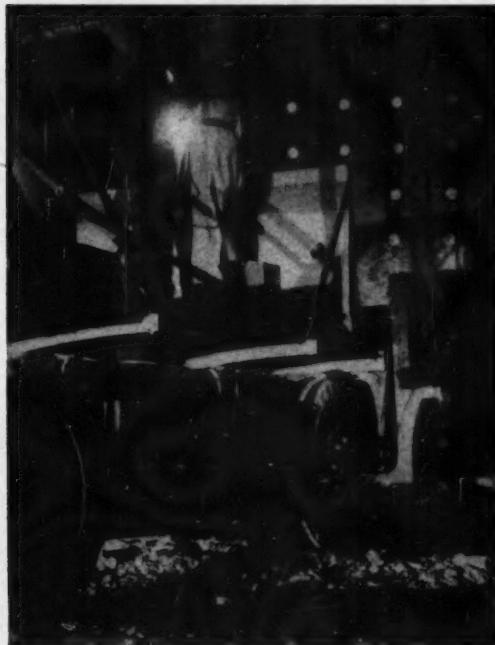
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# PRODUCTION . . .



KEY MEN\* at Billingham go over anhydrite mining plans for the next 75 years.



CIRCLES are projected onto face to indicate drilling positions. They're marked with red paint and . . .



HOLES ARE DRILLED before blasting. Mining a million tons of anhydrite consumes about 600,000 lbs. of explosives.

## Next Step: Sulfur from Anhydrite

Most U.S. chemical companies regard gypsum (calcium sulfate) as a raw material they can get along very nicely—without. But it's a case of one country's meat being another country's poison, for Imperial Chemical Industries has been mining anhydrite (anhydrous calcium sulfate) for 25 years at Billingham (England), has

built a whole series of chemical operations around it. Now, it has decided to erect a full scale retort for the production of sulfur and sulfur dioxide by desulfurizing anhydrite and once again, attention is focussed on the firm and its rich anhydrite deposits at Billingham.

There's been an off-again, on-again interest in this country in calcium sulfate as a source of sulfur. A few years ago, for instance, Phillips Chem-

ical Co., was seriously considering the production of ammonium sulfate from ammonium carbonate and the calcium sulfate sludge from nearby superphosphate plants (CW, Oct. 13, '51). But when you need sulfur, you just can't beat the Frasch product. And now that the shortage is over, alternative sources are not getting so critical an appraisal.

**Memory Lingers:** In England, too, the shortage is over, but the memory

\* (L. to R.): John Owen, underground manager; Gordon Stewart, manager of the mine; Walter Hine, general foreman, and Mine Surveyor Edwards.

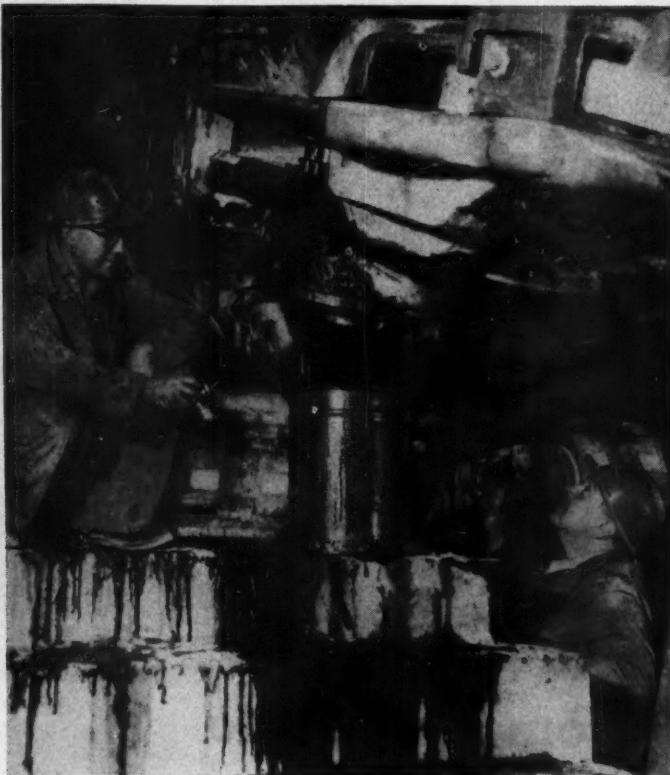
## PRODUCTION . . . . .



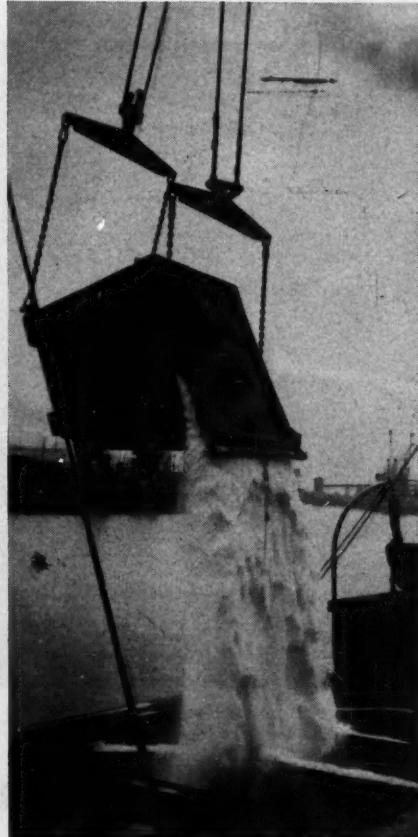
AFTER BLASTING, the anhydrite is picked up and conveyed to truck. Equipment can handle ten tons in five minutes.



PRODUCTION PROBLEMS too are hashed over underground.



ALL ENGINEERING CONSTRUCTION and maintenance work is done in this underground "garage." Here a Joyloader gets its annual overhaul.



FINAL PRODUCT, ammonium sulfate, is loaded onto ship.

lingers on—more poignantly because of its severity. It's not surprising that I.C.I. is taking a more than academic interest in means of increasing its utilization of anhydrite at the expense of imported sulfur or sulfuric acid.

Last week, the CW CAMERA toured the Billingham mine, found it shooting for a record 1 million ton/

year output. The bulk of this goes toward the manufacture of ammonium sulfate (through the reaction with ammonium carbonate).

Since, in this country, the accepted way of hooking a sulfate radical to an ammonium group is with sulfuric acid, the use of anhydrite in making ammonium sulfate gives I.C.I. a sub-

stantial saving on sulfuric. It also offers a good example of how the firm is looking for means of increasing the savings:

It's investigating the production of nitrophosphates (CW, Mar. 21) by substituting nitric acid for sulfuric acid in the acidulation of phosphate rock.

# • Davison Bulletin •

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## TOXICITY EVALUATION OF NEW ^ CHEMICAL PRODUCTS

Most manufacturers of chemicals make public very complete physical, chemical and engineering information about their new products — most have excellent laboratories of their own for developing this kind of data.

Equally important to the users of new chemicals is another kind of precise information, the toxicological properties of the new chemicals.

Such questions as these are likely to arise, according to a recent news release of National Safety Council: "What may be the effect upon workers who will come in contact with this new chemical substance either accidentally or as a necessary part of the processes in which it will be used? How does this new substance compare with common and well-known industrial chemicals and what is the information on the general order of toxicity? Is it low, intermediate or high? Are the hazards those of inhalation as a dust, fume or vapor, or can the material be absorbed directly through the skin? Does it possess any properties of primary irritation of the skin or the eyes?"

National Safety Council has outlined a procedure for evaluating the acute toxicity of new chemicals by the producer before marketing. This procedure, the Council states, will furnish sufficient toxicity information to allow production and shipment to the ultimate user to be carried out in a safe manner when the test results are properly interpreted.

The United States Testing Company, Inc., we believe, has the skills, equipment and experimental animals necessary to carry out the highly specialized type of investigation outlined by the National Safety Council. Cost and details of this service will be supplied upon request. Please write for a copy of the National Safety Council's Proposed Procedures for Evaluating the Acute Toxicity of New Chemicals.

*P.S. The National Safety Council Procedure is applicable to known chemical products as well as the new.*

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## PRODUCTION . . . . .



NEUMANN, SCHMIDT AND WELCHMAN: Big hopes for a German line.

## Old Face, New Place

Taking direct aim at the U.S. process industries as a market is the firm of Neumann and Welchman (New York City) which is bringing to this country the established line of equipment made by Germany's Rheinheutte. The line needs no introduction to European engineers but their American counterparts will get their first view of it next week.

For at the Chemical Exposition in Philadelphia, Pa., Charles Neumann and his partner Charles Welchman will team up with Rheinheutte's chief engineer, Walther Schmidt to enlighten industry on the lines' strong points. Here's what they'll be plugging:

- A glandless process pump in cast iron, special steels, bronze, silicon iron or other materials. There's been a lot of interest in this country in similar pumps and several have been placed on the market in the last two years. However, both Neumann and Welchman figure that Rheinheutte's twenty years' experience in making them and some special design features give the German pump some strong competitive advantages.

They point out that absence of the packing gland permits leak-tight service even under rugged conditions; that it also eliminates chances for contamination of the fluid being handled. Rheinheutte pumps have been used in Europe to handle sulfuric, nitric, chlorosulfonic acids, oleum, ether, carbon bisulfide, and Neumann and

Welchman see no reason why they can't be used in similar capacities here.

In the pumps, vanes on the back of the impeller are designed to keep the shaft seal under partial vacuum during operation. Passage of air or gas past the rotating shaft is avoided by means of a liquid-sealing system. When the pump is shut down, a centrifugal governor actuates the seating of a ring valve to prevent passage of fluid into the shaft way. When the pump is accelerated to full speed, the governor opens the ring valve.

- Two gate valves are the other big strings in Neumann and Welchman's Rheinheutte bow. One is designed to operate with complete freedom from chattering or fluttering of the gate. The other makes use of a flat plate sliding between sealing rings to give what's claimed to be leak-proof and vacuum type shut-off for long periods.

Like the pumps, the valves are aimed at corrosive applications in the process industries. They too are made in a number of different alloys depending on the fluid being handled.

The partners will import the pumps and valves along with other pieces in the line in ASA and API standards. The partners figure that for the immediate future, delivery will take two or three months. But they hope that if the line is accepted, they'll be able to build up a stock and give delivery in three to four weeks.

# CHEMICAL PROCESS NEWS

PUBLISHED BY CHEMICAL PROCESS DIVISION, THE M. W. KELLOGG COMPANY

NOVEMBER 1953

## NOTES ON

### AMMONIA

The cost of a plant for the production of synthetic ammonia is greatly affected by the composition of the feed gas.

\*\*\*

*Conventionally, if natural gas is the feed it must undergo several preparatory steps to produce a suitable mixture for the ammonia synthesis. Reforming or partial combustion must be followed with CO shift and then absorption purification to remove CO<sub>2</sub> and unconverted CO. On the other hand, if hydrogen-rich gas is the charge the process requirements are greatly simplified. The feed is chilled to low temperature and subjected to liquid nitrogen washing to remove impurities. Ammonia synthesis is accomplished by the same method with either feed stock.*

\*\*\*

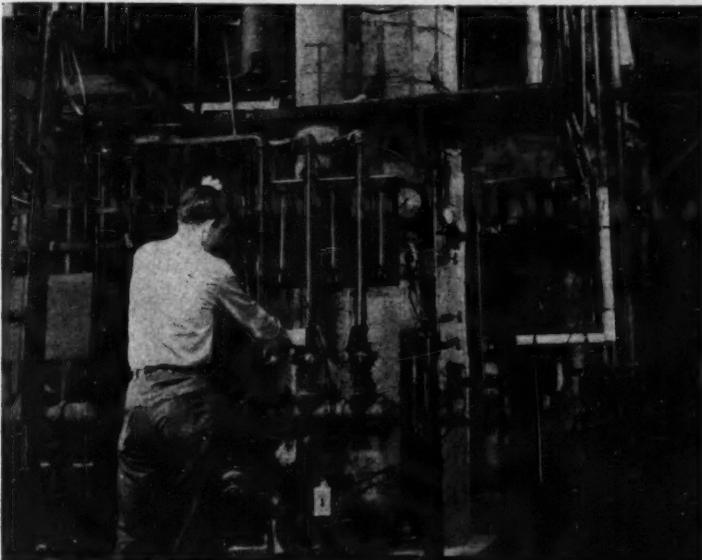
Since the largest single item of cost in the production of ammonia is the charge for plant depreciation, (about 20% greater than per-ton-direct-operating-cost in a natural gas feed plant) the extent of the equipment required to prepare synthesis gas has a major effect on total production cost.

\*\*\*

*Economic analyses of processes involving both feeds show that the payout time for plant utilizing hydrogen-rich gas is in the neighborhood of three years, and that employing natural gas is less than five years.*

\*\*\*

Thus there is a great economic incentive for anyone with hydrogen-rich gas or by-product hydrogen available to enter the fields of ammonia production.



## Ethylene Pilot Plant Studies Disclose Flexibility of Unique Pyrolysis Method

In the pilot plant shown in the illustration Kellogg is currently carrying on extensive studies of the adaptability of its unique pyrolysis process to the production of high purity ethylene from feed stocks other than naphtha—the charge stock for which the process was originally developed.

The pilot plant runs have already proved that the method can be employed successfully on ethane, propane and heavier materials without production of the large amounts of coke normally encountered in conventional processes.

This low coke production had been predicted on the basis of commercial operating reports from an ethylene plant which Kellogg designed and erected in England for the pyrolysis of naphtha.

Whereas conventional pyrolysis furnaces usually average only a few weeks on stream before being shut down for coke removal, the English plant has remained in continuous operation for 12-month periods. During these times it was operated with sufficient severity to convert 55 to 60 wt. % of the naphtha to ethylene and other gaseous hydrocarbons.

In addition to producing high quality products over extended periods, the plant has attained maximum economy of the heat required for pyrolysis. A novel design in the quenching system which follows the pyrolysis step, plus the use of low-level heat by the absorption refrigeration system, provide major savings through recovering most of the heat used in cracking.

*For further information, technical data, etc., relating to chemical or petrochemical processing, write*

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*Nothing takes the place of Glycerine*



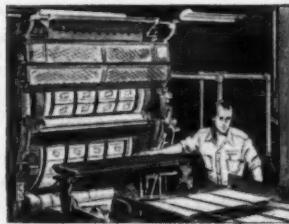
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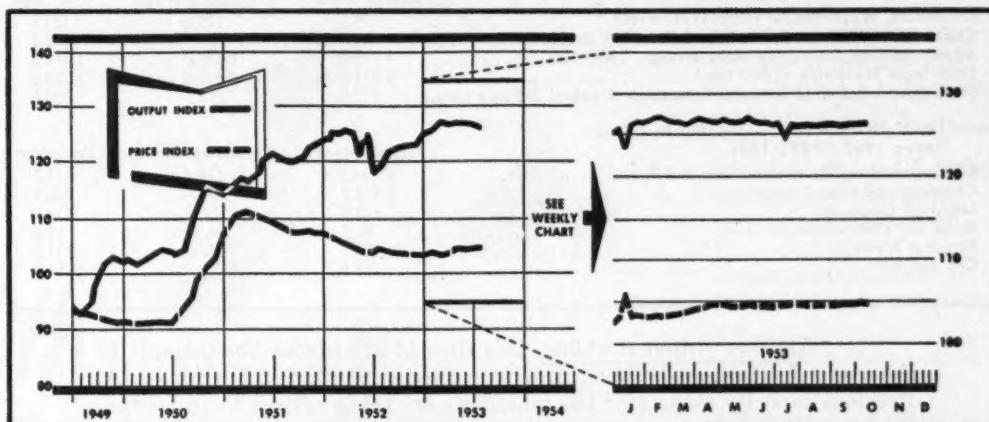
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UNITED STATES STEEL

# MARKETS . . . . .



## MARKET LETTER

While the eyes and ears of the chemical industry were attuned to Washington last week (see Newsletter), news was also being made in the nation's chemical markets.

Of particular interest was last Friday's 4¢/gal. cut in isopropyl alcohol. The lower price (e.g., 50½¢, c.l., drums), came as no surprise to market observers in light of the recent ethyl alcohol reductions (CW Market Letter, Nov. 21).

Most producers, however, are little concerned over the softening, feel that the posting of more realistic alcohol prices will tend to stabilize the market.

There's apparently no such firming influence at work for harried ammonium sulfate producers. At least several have cut output drastically. Reason: sluggish demand, overflowing storage.

It's evident, too, that recent attempts—via price slashes—to buck imported material haven't been too successful.

One hope for ammonium sulfate makers, however, may lie in revelation of the successful bidders for the job of supplying some 140,000 tons the government will buy for Korea. If U.S. companies can edge out foreign producers, that business will go a long way in changing the supply position of the domestic market.

The bids, which were requested by the General Services Administration, were to have been opened early last week—but the opening was delayed. The news might be out later this week.

It may be welcome word to mid-Western sulfuric users that General Chemical will again expand its River Rouge (Mich.) acid installations. The company, with an eye on the future, envisions stepped-up demands from Detroit-area consumers (steel, automotive, fertilizer, chemical).

Underlining General's confidence: a major addition to the plant's acid facilities was put into production only last month. And the new sulfuric unit—scheduled to go onstream late next summer—will nearly double present production capacity.

## MARKET LETTER

### WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100) .....	125.7	125.6	124.5
CHEMICAL WEEK Wholesale Price Index (1947=100) .....	104.9	105.2	102.3
Bituminous Coal Production (daily average, 1,000 tons) .....	1,546.0	1,470.0	1,817.0
Steel Ingot Production (1,000 tons) .....	1,974.0 (est.)	2,044.0 (act.)	2,203.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	255.0	258.5	250.6

### MONTHLY INDICATORS—Wholesale Prices

	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods) .....	114.5	114.7	113.0
Chemicals and Allied Products .....	106.7	106.7	103.9
Industrial Chemicals .....	119.5	120.0	113.9
Drugs and Pharmaceuticals .....	93.5	93.5	92.0
Fertilizer Materials .....	112.9	113.0	111.0
Oils and Fats .....	53.4	51.1	51.0

Another output doubling, this time of anhydrous ammonia, is in the works for the now-building American Cyanamid plant at Fortier (La.). Previous capacity plans (for 150 tons/day) are being revised to up production capacity to 300 tons.

The company will market part of its anhydrous ammonia (for use as a nitrogen source) to lush South and Southwest sugar, rice, cotton and corn areas and consume the balance captively at the \$50-million plant.

In other area of the market place, pyridine makers are having a tough time moving all of their production. Demand for the 2-degree material continues on the soft side, with no immediate pickup prospects in sight.

Although manufacturers' schedules still read a steadfast \$1.15/lb. for the refined coal tar derivative, there's more than a possibility of an impending change.

Trade talk that proved accurate is this week's higher price on cylinder chlorine (CW Market Letter, Nov. 21). The increase, posted by Pennsalt, goes into effect immediately on spot business; not until New Year's Day on contracts.

The hike—generally 75¢ to \$1/cwt.—is the first in cylinder chlorine since Dec. '50, and is attributed to a three-time jump in freight rates since then.

It's a question, though, whether or not any price boosts are imminent in the nonferrous metals field. Lead sellers, however, are somewhat more optimistic at the moment than they have been in months. Reason: stepped-up European demand has cut imports of foreign metal to the U.S., leaving the market to domestic producers.

Demand isn't too great as yet, but neither are producers' stocks. Add to this reports that consumers are also working on low inventories, and you have all the ingredients for a firmer situation. For any sudden upturn in domestic requirements could find prompt metal scarce, pressure prices upward.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending November 23, 1953

#### UP

	Changes	New Prices		Changes	New Prices
Liquid chlorine, cyls., c.l., wks. ....	\$ .01	\$ .0925	Tin tetrachloride, anhyd., drms., wks. ....	.005	.71
Sulfonated tallow, 25pcs., drms., l.c.l. ....	.01125	.07875	Tin metal ....	.015	.8225

#### DOWN

Isopropyl alcohol, refd., 91pcs., drms., c.l., divd., gal. ....	.04	.505	Diethyleneglycol monomethylether, drms., c.l., divd. ....	.04	.2075
Sodium hydrosulfite, drms., c.l., frt. alld. ....	.015	.23			

All prices per pound unless quantity is stated.



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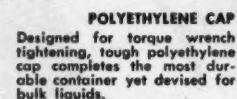
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## Helium Becomes a Heavyweight

This week—on Thanksgiving Day—some 2½ million people in person, plus many more millions via television, will ogle a fantastic annual event: Macy's parade, which will usher in the holiday season in New York City. For millions the accent will be on the mirth-provoking aspects of the procession; but not a few chemical process industries men will be seriously and speculatively eyeing the stories-tall, rubberized, gas-borne balloons—and thinking about helium.

For skyrocketing demand may soon have the sole helium producer—Uncle Sam—hanging out a "Help Wanted" sign. Whether or not private industry will accept the invitation to get into the business is still a big poser, but this much is certain: expanding governmental and civilian uses for helium are building a mighty attractive—and perhaps soon-to-be-tight—market (*see table*).

Many helium users will question that word "soon," are bewailing an apparent critical shortage today. They are quick to point out that as recently as a month or two ago, shipments to users were roughly half of normal.

It's true, of course, that helium availability is—and has been—nipped, but the scarcity has less to do with inadequate production than with the means of conveying the gas from its source to distribution points.

**Transporting Troubles:** It's estimated that the four government-

operated helium plants\* are capable of producing, at top capacity, nearly 200 million cu. ft./year. Current consumption figures indicate that helium disappearance hovers around the 150-million mark—in effect, an approximate 50-million-cu.-ft. buffer against a true scarcity. That, of course, is assuming that the rate of consumption evident over the past few years remains nearly constant.

But when the ultimate consumer is not able to get the material he needs, whether because of a lack of production or whether it simply cannot be delivered to him, the end result can be legitimately termed a shortage. The latter reason is behind the current market distress.

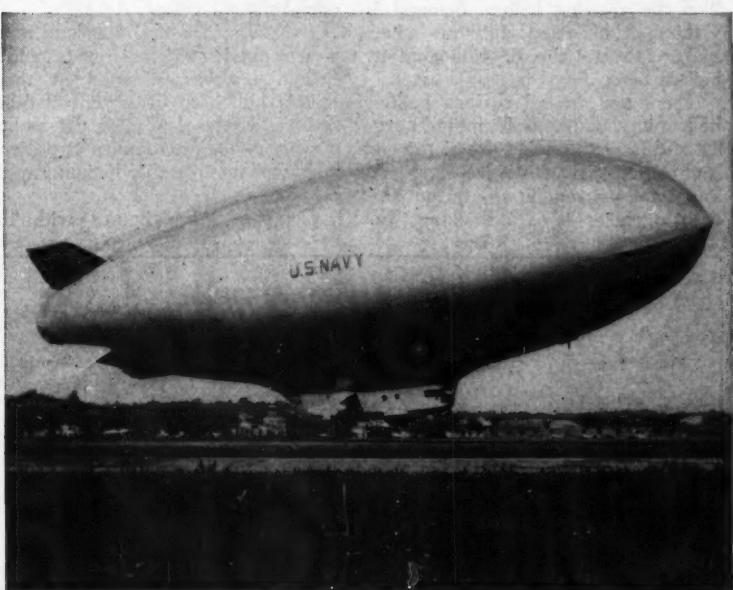
Bulk of the helium produced—one estimate says 75%—is shipped from the plants in special pressurized railway tank cars, most of the balance in standard compressed-gas cylinders. A negligible amount, volumewise, is distributed via automotive trailers. (The U.S. Navy owns the trailers and about 80 tank cars, which are used primarily in the service of federal agencies.)

In the Bureau of Mines' current budget, allowance is made for the purchase of five more of the special tank cars, which are actually 30 cylinders mounted on a flat car. (Each of the cylinders must withstand the 2,000-2,265 psi. pressure at which the gas

Shiprock (N. Mex.), Amarillo and Exell (Tex.), Otis (Kan.).



TOY SOLDIER: A delight for the children—and a market for helium.



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is shipped.) In times past the number of cars available was sufficient for adequate distribution of the gas both to the government and to straight industrial users.

In recent months, however, the stepped-up demand for tank-car deliveries of helium posed a problem to the bureau. Cars were not being returned to the pool fast enough to keep up with orders for the gas. For instance, in some Defense Dept. consuming locations, where officials felt it would be uneconomical to build permanent helium storage tanks, the tank cars were held, used for storage.

But the bureau is licking the problem of absent tank cars by continually stressing the need for quicker turnaround and by encouraging greater use of gas shipped in cylinders and trailers.

There is still a formidable economic

## All the answers... None of the problems

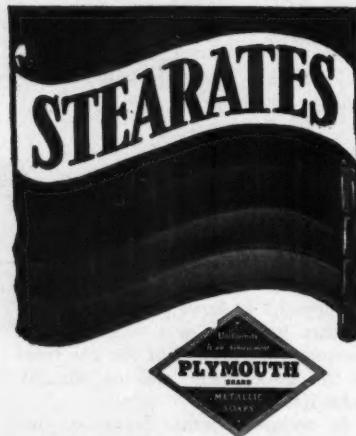


Makers of insecticides face four problems: (1) The buying of toxicants, (2) leftover stocks, (3) annoying shortages and, (4) costly delays. Many manufacturers of household, cattle, roach, and agricultural sprays, dusts, and aerosols have found MGK formulating service to be precise, prompt and profitable... the complete answer to these problems. Write for plans and prices.



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## MARKETS . . . . .

hurdle blocking even wider utilization of cylinders by consumers; an added filling service charge amounting to about \$2 or more for each 1,000 cu. ft. There is no comparable extra for trailer delivery, but the economics of truck transportation over long distances are said to be less advantageous than rail shipments.

**Diverse Quartet:** Of the four helium sources, the Exell and Otis plants are located on commercial gaslines. The helium must be extracted concurrently with production from the field or it is lost to fuel and other gas markets. Thus, these two plants should be operated more or less continuously.

Actually, though, even the Otis facilities may be shut down—as it was in 1949—when helium demand is extremely low. During such years in the past, only the Exell plant was in operation. But most of its output was transported by pipeline to the government-owned field near Amarillo, where it was pumped into underground storage areas. About 88 million cu. ft. of the now-vital element has been stockpiled in this manner.

The plant at Shiprock is supplied from gas lands owned by the Navajo Indians. The U.S. has secured rights to these lands under a long-term lease. But neither the Shiprock nor the Amarillo plant is operated when the requirements for helium are off. Reason: the gas from the supplying fields is commercially useless (contains about 77% nitrogen) after the helium is extracted, hence is discharged into the atmosphere.

Today all plants are in operation. And the growing helium demand is making it necessary for the mines bureau to tap the 88-million-cu.-ft. helium bank.

There are several reasons behind ballooning helium consumption. Largest and fastest growing use of the gas by commercial customers—and an important use among several government agencies—is as a shielding "at-

mosphere" for inert-arc welding of certain metals, notably aluminum, magnesium, stainless steel. Some 80-90% of the helium headed for industrial outlets winds up in that welding use.

Another helium consumer, still relatively small but showing a healthy scale-up, is in spectrometer leak detection.

**U.S.A. Use:** Helium end use patterns have long been all but obscured by a "For Military Use" label. And the Navy's lighter-than-aircraft program has been—and is—top-dog consumer. Last officially posted figures (for the calendar year 1950) reveal that the Navy's requirements accounted for over 42 million cu. ft.

The Weather Bureau's aerological balloons siphon perhaps 7-8 million; the Army and other federal groups, about 10 million.

Two newer outlets for helium recently added to the consumption pattern, and which may hasten the day when present government-run plants will be straining at capacity: the Army, Navy and Air Force guided missile projects (where helium is being used as a fuel propellant); Atomic Energy Commission programs. Details of these potential helium-gulpers are, of course, hidden under a security shroud.

**Time for an Assist:** That present producing plants and distribution facilities will one day—probably within two or three years—be completely inadequate to satisfy upcoming helium uses is an indisputable fact being bruited about at secret Washington confabs.

But it's a fact, too, that land areas now supplying existing plants hold a helium reserve estimated at more than 5 billion cu. ft. Extent of other reserves under lands of the public domain, though not known at present, may well double this helium supply cushion.

Compare those figures with the

**Helium—How Much and Where**  
(million cu. ft.)

Fiscal Year	Production	Federal shipments	Nonfederal Sales
1950	63.4	42.3	21.1
1951	98.1	68.5	29.6
1952	129.4	88.9	40.5
1953	152.1	96.1	56.0
1954 (est.)	170.0	107.0	63.0
1955 (est.)	192.0	122.0	70.0

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### MARKETS . . . . .

maximum 200-million-cu.-ft. capacity of the four U.S.-operated plants, and the tank storage capacity at the same four plants (which hold only 5 million cu. ft.), and the solution of any present or future helium supply-demand squeeze looms large: it's time for private industry to accept the government's invitation to pitch in.

### Cold Deck

Underscoring once again (CW, Nov. 14) the piecemeal fire-fighting applications that could one day cohere into a sizable plastics market, Cleveland's Lexsuco Corp. just recently demonstrated its fire-retardant roof before the collective critical gaze of a group of architects, fire underwriters, fire department officials, and representatives of the Ford Motor Co.

The roof features a fire-retardant vinyl film sandwiched between the conventional steel or aluminum deck and cork or fiber glass insulating material. Done away with are the hot tar (or asphalt) mopping and vapor barrier (two plies of tar- or asphalt-impregnated roofing felt). Specially compounded by the Goodrich Co.'s plastics division, the new vinyl vapor barrier comes in rolls 54 in. wide, 300 yds. long, 4 mils thick.

Market target for Lexsuco is all industrial and commercial roofing. Compared to conventional covering, cost is competitive, declares the firm, while fire resistance is greater.

- The vinyl vapor seal replaces all combustible material between deck and insulation.
- It eliminates drippage of flammable tar and asphalt.
- This type roof construction also provides greater roof rigidity, minimizes buckling of the roof deck during a fire.

By way of forcibly putting its point across, Lexsuco accented its remarks with a flame-licked climax. Two roofs were set up—one conventional, the other with a vinyl film vapor barrier. Hot kerosene-fed fires, favorably simulating those in plants, were started under each deck. Eight minutes later—when the conventional roof collapsed—thermal couplers registered from 230 to 690 F cooler for the newer-type roof, served to show fire retarding superiority of the vinyl film.

Ford, for one, was favorably impressed, offered Lexsuco a fat roofing contract for its new Cleveland engine and stamping plants. It's a hearty send-off for Lexsuco, and more important, it could also signal the opening of a well-worth-looking-into market for plastics manufacturers in general.

Baker can supply these METALS	In these forms									Miscellaneous
	Chloride	Bromide	Sulfate	Nitrate	phosphate	Carbonate	Acetate	Chromate	Oxide	
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Molybdenum								R		SODIUM & AMMONIUM MOLYBDATE: TPR
Manganese	R		PR	R	R	R	R	PR		
Iron (Ferric)	R		R	R						HYDROXIDE: P
Iron (Ferrous)			PR							FERROUS AMMONIUM SULFATE: R
Cobalt	PR		PR	PR		R	R	R		
Nickel	PR		R	PR		R	R	R		NICKEL AMMONIUM SULFATE: R
Copper	PR	R	R	TPR		R	R	R		
Zinc	PR	PR	PR	TR	P	R	TR	P	R	
Cadmium	PR		PR	R		R	R	R		IODIDE: R
Mercury	PR		R	PR			PR		TPR	IODIDE: R
Aluminum	R		PR	R	P		R		R	HYDROXIDE: PR
Tin (Stannic)	PR									SODIUM STANNATE: R
Tin (Stannous)	TR							R		
Lead	TR		R	TPR		R	TPR	R	TR	THIOCYANATE: P
Bismuth	R			PR					R	OXYCHLORIDE: R
Bismuth (Sub)				P	P					SUBGALLATE: P

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CHART

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R—Reagent Quality

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Gray—Tonnage

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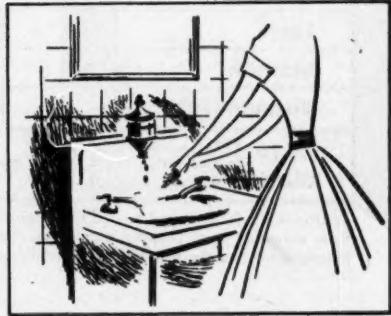
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Carbonate — Magnesium Chloride — Muriate  
of Potash — Silicas — Talc

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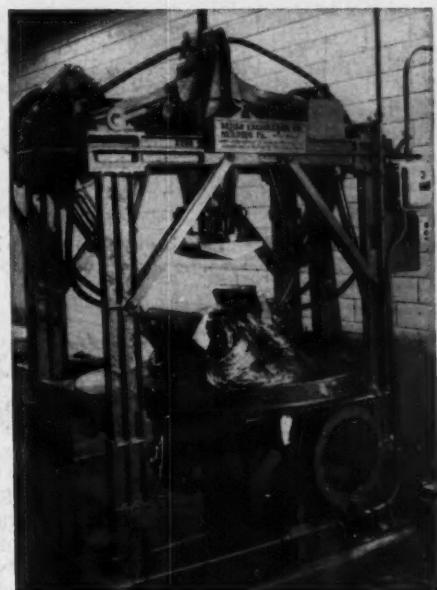
# SPECIALTIES . . . . .



1 LOZENGE BASE of glucose, sugar and water is put in kettle by vacuum, cooked 7-8 minutes. Daily, 50-60 batches of 120 lbs. are made.



2 HEXYLRESORCINOL is blended in candy; amount is determined by batchweight.



3 MECHANICAL KNEADING and cooling is followed by hand kneading of candy.

## Hexylresorcinol Makes a Sugar Cure . . .

A medical specialty that has long enjoyed popular favor is the throat lozenge. And one of the best known of these is Sharp and Dohme's Sucret, a tablet containing the antiseptic hexylresorcinol. Introduced in 1932, Sucrets have outgrown their original production facilities, and new equipment for their manufacture has been installed recently by S&D.

This week the CW CAMERA pans through the air-conditioned layout at S&D's West Point (near Phila.)

warehouse building, follows the step-by-step manufacture that yearly consumes half a ton of hexylresorcinol. With high-speed equipment, much of it designed and built by S&D, more than a quarter-billion medicated tablets are produced yearly.

**Sweet Start:** First step in making Sucrets is preparation of the candy base. The glucose, sugar and water that make up the base are drawn into the stainless steel kettle by vacuum. Flavoring and coloring are put in,

and the mass is cooked seven-eight minutes. Sucrets are generally green, with a minty flavor, but because Argentine law demands that only natural flavoring and coloring be used in medicines sold there, Buenos Aires-bound Sucrets are red, with cinnamon flavor.

Caprokol, S&D's brand of hexylresorcinol, is then stirred into the batch. The 120-lb. mass of medicated candy is then placed on a watercooled table and kneaded mechanically. After it's

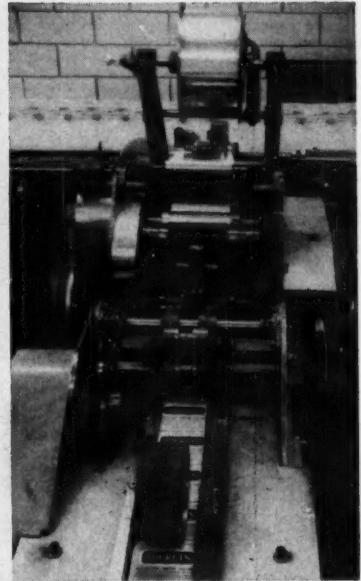
SPECIALTIES . . .



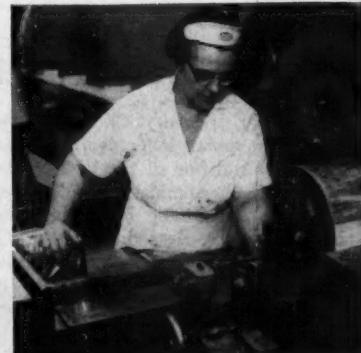
**4** HALF THE BATCH is put in spinner, where rollers form the lump into long conical shape. From tip of cone, candy "rope" goes to 1,550 piece/min. tabletting machines.



**5** WRAPPING MACHINES en-foil cooled tablets; then packed 24/box, identified by their control number.



**6** CELLOPHANE is wrapped around boxes as they come off the conveyor belt and head for display box packer.



**7** BOXES, in foil for moisture protection, are sealed, packed in shippers.

## . . . for Scratchy Throats

cooled, hand working brings it to the proper consistency; the batch is divided in halves, and one of these lumps is placed on the spinning machine.

The spinner has rollers that turn the mass first one way for about 10 seconds, then reverses for 10. These rollers form the lump into a long cone, the tip of which is drawn off and fed to another "rope forming" machine, which produces a strand of candy about  $\frac{1}{4}$  in. in diameter. It is fed into a tabletting machine. This clips off and forms the base into the familiar Sucret tablet at a rate of 1,500/min.

From the tablet maker, the Sucrets pass through a cooling conveyor, which can handle about 133,000 lozenges per hour.

The individual tablets next enter a wrapping machine that enfolds single drops in foil and wax paper, then feeds them into a chute where operators can grab them, pack them 24 in a box. Each box contains a batch control number and packer's number on small slips of paper.

Now in metal boxes, the Sucrets

are conveyed through a unit that gives them a cellophane overwrap, at a 100 box/min. clip. The cellophane boxes are then hand-packed in display boxes.

**Show-off Box:** Display boxes are actually "half boxes," hold 6 containers of tablets. Fitted together, they make a 12-box package. This package is then automatically foil-wrapped, and heat-sealed by an operator. Twelve of the foiled packages are placed in a corrugated shipper, which is then transferred to an automatic case sealing machine. Last step is palletizing the cases, and transferring them to the warehouse. The entire operation, start to finish, takes less than two hours.

These new facilities for Sucrets are only part of Sharp & Dohme's equipment for producing throat lozenges. The firm has already pushed one of its own competitive items, an antibiotic lozenge, into dollar volume sales that nearly equal that of the older lozenges. Streamlined, custom-designed equipment has permitted the company to multiply the small profit per lozenge into a tidy profit.

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## SPECIALTIES . . .

### Enzyme Squelchers

Despite the medical skepticism that played down the efficacy of enzyme-inhibitors in toothpastes, the anti-enzymes have clearly upped sales. Here is the latest information from companies that are cashing in on the public's enthusiasm.

Lambert Pharmacal Co. reports that it has nearly doubled employment at its St. Louis and Jersey City plants in the last two months. Innovator in the field with Listerine Antizyme, it is shipping at seven or eight times the previous rate. Sales figures, it says, are up even more.

Block Drug Co., makers of Amm-i-dent, states that October was the biggest month in the company's history. At the same time, it explains that to get on the bandwagon nothing new was added. Instead, ads merely stressed that Amm-i-dent's ammoniated formula by its very nature assured anti-enzymatic action.

Ipana's makers, Bristol-Myers Co., says this year's sales will top all previous ones. It reports they started rising early in the year because of heavier advertising, increased selling efforts, and an improvement in the taste of its dentifrices, and have continued to rise since the onset of the anti-enzyme era.

It claims two enzyme squelchers. One is based on the ammoniated formulation, the other on an undisclosed anti-enzyme ingredient.

Long expected, the newest entrant in the race is Colgate, which last week began TV and newspaper advertising with a "clinical proof" theme. It calls its inhibitor Gardol.

**Big Bite:** Naturally, the rising dentifrice sales mean the toothpaste makers will take a bigger bite of the enzyme-inhibiting chemicals—chemicals like sodium-N-lauroyl sarcosinate, the agent in Colgate's paste, and sodium dehydroacetate, in Listerine's product.

Among the chemical houses that have reason to applaud boosted business is Antara Chemicals, division of General Dyestuff, probably the leading supplier of the sarcosinate. Dow Chemical has the inside track on the dehydroacetate, but the supply picture here will change sharply within two weeks—Dow plans to quit making the salt December 1, guesses that it will have only a small quantity left by then.

It has referred customers to Carbide and Carbon Chemicals, which is planning manufacture of sodium dehydroacetic acid in the "foreseeable future." Until production starts, they

may be faced with a supply problem.

Whether or not the efficacy of the inhibitors has been proved, there's certainly clean-cut proof of the efficacy of advertising. But yet to be seen is just how long promotion-inflated markets for the products will last.

**Yerkes Sale:** Yerkes Chemical Co., Inc., of Winston-Salem, N.C., has been sold to a group of stockholders headed by George W. Ayers. The new owners say that the company's location will be changed, that the line of products and sales territory will be expanded.

**Fire:** The two-story plant of Industrial Finishers, Inc., an enameling firm in Miami, Fla., was recently destroyed by fire. Loss estimate is \$100,000.

**Resistant Inks:** DRIflo Manufacturing Co. (Hazel Park, Mich.) now markets a line of indelible colored inks that the producer claims are solution- and heat-resistant. The inks are used for coding and come in 12 standard colors.

**Control Compound:** Ethyl Corp. has developed a new ignition control compound for gasoline, designed to suppress pre-ignition and spark plug fouling.

**Added Source:** Dodge & Olcott, Inc. (agent, New York), reports that W. Sanderson & Sons of Messina, Italy, is now producing oil lemon in Argentina.

**California Construction:** Johnson & Johnson is building a plant in the San Francisco bay area. Located in the Belle Haven industrial district, it will cover two and one-half acres, will provide 100,000 sq. ft. of floor space.

**Photocopy News:** Peerless Photo Products, Inc. (Shoreham, N.Y.) is manufacturing a flat-bed printer, called the Dri-Stat printer, for making photo copies by the "dry" (or transfer) process. The company says it makes clear, sharp copies of letters, invoices in less than one minute.

**Spray Gauze:** Aeroplast Corp. (Dayton, O.) is making a liquid, "spray on" dressing intended to replace the need for conventional gauze dressings (CW, Dec. 13, '52). Applied with an aerosol bomb, Aeroplast forms a transparent, flexible, occlusive plastic film. It comes in 6-oz. dispensers.

**New Granule:** Dow Chemical Co. is

## CHEMICAL WEEK • ADVERTISING INDEX

NOVEMBER 28, 1953

AMERICAN AGRICULTURAL CHEMICAL CO., THE .....	51	PRESSED STEEL TANK CO. ....	85
Agency—Cowan & Dengler, Inc.		Agency—The Buchen Co.	
AMERICAN CYANAMID CO. ....	10	QUAKER OATS CO., THE, CHEMICAL DIV. ....	3
Agency—Hazard Adv. Co.		Agency—Rogers & Smith Adv.	
AMERICAN HARD RUBBER CO. ....	35	REFINED PRODUCTS CORP. ....	44, 45
Agency—W. L. Towne Adv.		Agency—Riedl & Freeds, Inc.	
ANALYTICAL MEASUREMENTS, INC. ....	36	RHEEM MFG. CO. ....	27
Agency—Merceray Handy & Van Denburgh		Agency—Campbell-Ewald Co.	
ANSUL CHEMICAL CO. ....	8	SANTE FE TANK & TOWER CO. ....	50
Agency—J. A. Cormack Adv.		Agency—Tilden & Cants Adv.	
ARMOUR & CO. ....	8, 7	SCHUTZ-O'NEILL CO. ....	3rd Cover
Agency—Foot, Cone & Belding, Inc.		Agency—Foulke Agency, Inc.	
ASHCRAFT-WILKINSON CO. ....	42	SHELL CHEMICAL CORP. ....	2nd Cover
Agency—Liller, Neal & Battle		Agency—J. Walter Thompson	
BAKER CHEMICAL CO., J. T. ....	81	SPARKLER MFG. CO. ....	31
Agency—Wildrich & Miller, Inc.		Agency—Krecker & Melton, Inc.	
BUFFALO ELECTRO-CHEMICAL CO., INC. ....	39	TENNESSEE PRODUCTS & CHEMICAL CORP. ....	35
Agency—John Mathes, Inc.		Agency—Griswold-Eshleman Co.	
CARBIDE & CARBON CHEMICALS CO., DIV. OF UNION CARBIDE & CARBON CORP. ....	40	TRUBEK LABORATORIES ....	17
Agency—J. M. Mathes, Inc.		UNION CARBIDE & CARBON CORP., CARBIDE & CARBON CHEMICALS CO. ....	49
CELANESE CORP. OF AMERICA ....	28	Agency—J. M. Mathes, Inc.	
Agency—Ellington & Co.		U.S. RUBBER CO., MECHANICAL GOODS DIV. ....	12
CHEMICAL CONSTRUCTION CORP. ....	25	Agency—Fletcher D. Richards	
Agency—Michel Cather, Inc.		U.S. STEEL CORP., COAL CHEMICALS DIV. ....	72
CHEMICAL MANUFACTURING CO., INC. ....	32	Agency—Batten, Barton, Durstine & Osborn, Inc.	
Agency—Sterling Adv. Agency, Inc.		U.S. STEEL CORP., STEEL PRODUCTS DIV. ....	36
CHEMI-FORM CORP. ....	30	Agency—Batten, Barton, Durstine & Osborn, Inc.	
CHICAGO & EASTERN ILLINOIS RAILROAD ....	18	U.S. TESTING CO., INC. ....	68
Agency—Fuller & Smith & Ross, Inc.		Agency—Robert B. Grady Co., Inc., Adv.	
CONTINENTAL CAN CO. ....	71	VICTOR CHEMICAL WORKS ....	3
Agency—Batten, Barton, Durstine & Osborn, Inc.		Agency—Russell M. Seeds Co.	
CRUCIBLE STEEL CO. OF AMERICA ....	63	YORK CO., INC., OTTO H. ....	41
Agency—G. M. Basford Co.		Agency—Mercredy, Handy & Van Denburgh	
DAVISON CHEMICAL CORP., THE ....	67		
Agency—St. George & Keyes, Inc.			
DAY CO., INC., THE J. N. ....	21		
Agency—Strauchen & McKim			
DOW CHEMICAL CO., THE ....	39		
Agency—MacManus, John & Adams, Inc.			
DREW CO., INC., E. F. ....	23		
Agency—The Atkin-Kynett Co.			
DU PONT DE NEMOURS & CO., INC., E. I., GRASSELI DIV. ....	40		
Agency—Batten, Barton, Durstine & Osborn, Inc.			
DU PONT DE NEMOURS CO., E. I., ELECTROCHEMICALS DEPT. ....	79		
Agency—Batten, Barton, Durstine & Osborn, Inc.			
DUVAL SULPHUR & POTASH CO. ....	42		
Agency—Liller, Neal & Battle			
EASTMAN KODAK CO. ....	758		
Agency—Charles L. Rumrill Co., Inc.			
EIMCO CORP., THE ....	28		
Agency—Matise Co.			
ESSO STANDARD OIL CO. ....	75		
Agency—McCann-Erickson, Inc.			
FRITZSCHE BROTHERS, INC. ....	54		
GENESEE RESEARCH CORP. ....	55		
Agency—Charles L. Rumrill & Co., Inc.			
GLIDDEN CO. ....	660		
Agency—Maldrum & Fowsmith, Inc.			
GLYCERINE PRODUCERS' ASSOCIATION ....	70		
Agency—G. M. Basford Co.			
GOODRICH CO., B. F., AMERICAN ANODE DIV. ....	1		
Agency—The Griswold-Eshleman Co.			
GRAND RIVER DAM AUTHORITY ....	248		
Agency—White Adv. Agency			
GUARANTY TRUST CO. OF NEW YORK ..	34		
Agency—Albert Frank-Guenther Law, Inc.			
HARDESTY CO., INC., W. C. ....	780		
Agency—J. Hayden Twiss Adv.			
HERCULES POWDER CO. ....	62		
Agency—Fuller & Smith & Ross, Inc.			
HEYDEN CHEMICAL CORP. ....	Back Cover		
Agency—Sommers-Davis, Inc.			
INNIS, SPEIDEN & CO. ....	62		
Agency—Sterling Adv. Agency			
INTERNATIONAL MINERALS & CHEMICAL CORP. ....	64		
Agency—C. Franklin Brown, Inc.			
KELLOGG CO., THE M. W. ....	47, 60		
Agency—Gordon Baird Assoc., Inc.			
LITTLE, INC., ARTHUR D. ....	2		
Agency—Larson Randall, Adv.			
MC LAUGHLIN GORMLEY KING CO. ....	776		
Agency—The Alfred Colly Co.			
MERCOID CORP., THE ....	860		
MUTUAL CHEMICAL CO. OF AMERICA ..	11		
Agency—J. Hayden Twiss Adv.			
NORFOLK & WESTERN RAILWAY CO ...	61		
Agency—Houck & Co.			
OHIO-APEX DIVISION OF FOOD MARY CORP. ....	748		
Agency—Advertising, Inc.			
PARSONS-PLYMOUTH, M. W. ....	878		
Agency—Terrill Belknap Marsh Assoc.			
PFKAUDLER CO. ....	57		
Agency—Charles L. Rumrill & Co.			
PFIZER & CO., INC., CHARLES ....	82		
Agency—McManus, John & Adams, Inc.			
PITTSBURGH COKE & CHEMICAL CO. ....	37		
Agency—Walker & Downing			
PLAX CORP. ....	78		
Agency—Charles Brunelle Co.			
POWELL VALVES ....	33		
Agency—Ralph H. Jones Co.			

## SPECIALTIES . . . . .

making a new granulation of the polystyrene Styron 475. Intended for customers coloring their own molding compounds, it's designed to improve blending.

**Pair From Permatex:** Permatex Co., Inc. has added two products designed for the aircraft industry. One is a silicone-containing polish that cleans and shines painted, lacquered or doped airplane surfaces in a single operation. The other is a fabric cleaner for removing stains and smudges. Both products are sold in pint and gallon sizes.

**Cream Base:** Mann Fine Chemicals, Inc. (New York) now offers a cosmetic base containing sufficient natural estrogenic hormones to produce a cream of 10,000 International Units/oz. The base is for the benefit of firms that do not have time or money to work out their own formulas.

**CSMA Award:** Chemical Specialties Manufacturers Assn. will make its 1953 Achievement Award to two U.S. Dept. of Agriculture scientists at its 40th annual meeting in Washington, Dec. 6-8. The recipients, F. B. LaForge and Milton S. Schrechter, are the discoverers of the synthesis of Allethrin, the synthetic pyrethrum.

**Keepaway:** Figuring prevention is the best cure, the Army is extending efforts to find compounds that will repel mosquitoes that carry yellow fever and dengue fever parasites. Compounds that have proved useful, are mentioned in U. S. Pats. 2,653,894, and -895. One is trimethyl-octene-diol in which hydroxyl groups are alcoholic and attached to methyl-substituent-carrying carbon atoms on either side of the double bond. The second is the butyl ester of N-benzyl glycine; both are used in nontoxic insect repellent carriers.

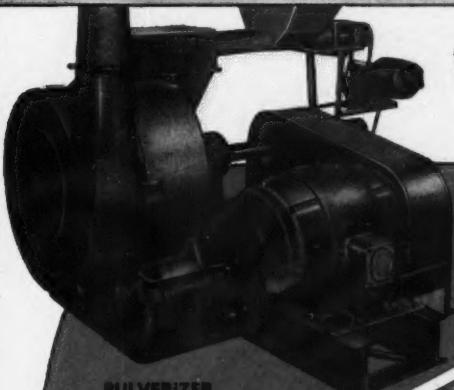
**Bugkiller Shift:** A recent Rome-held, World Health Organization-sponsored meeting paid special attention to the increased emphasis being placed on phosphorous derivatives in the fight against insects. The principal concern was in prevention of fatal effects that might result from handling these products.

**Commerce Dept. Catalog:** A new simplified drug catalog has just been released by the U. S. Dept. of Commerce. Title: "Simplified Practice Recommendation R 250-53, Standard Drug Catalogs." Price: 20¢.

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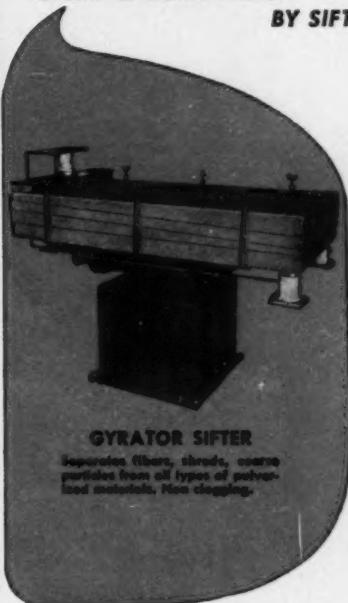
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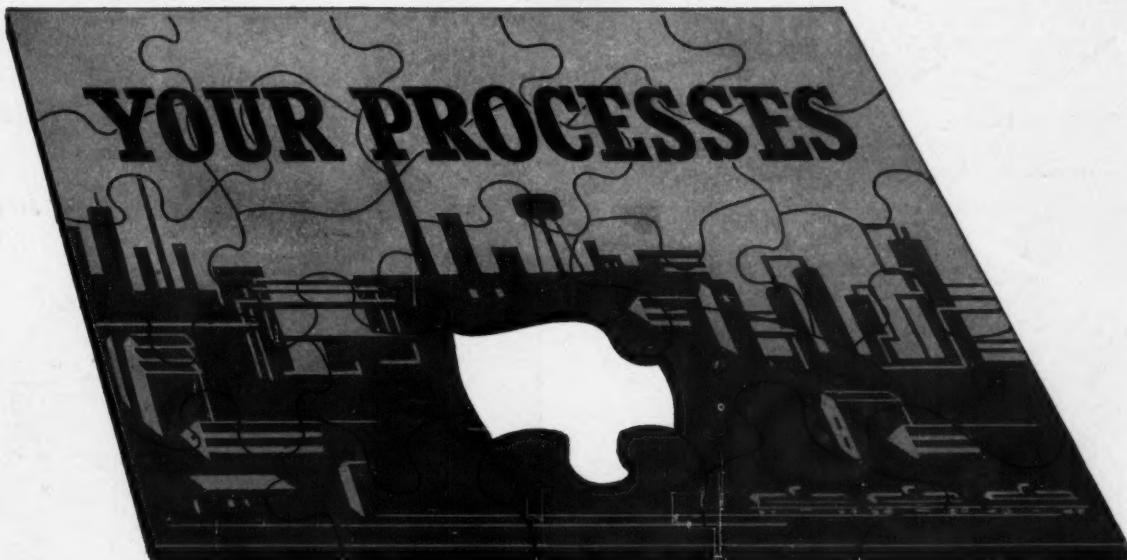
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